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ABSTRACT

This document consists of the first year's output (5 issues) of a newsletter describing opportunities and resources for youth who are academically gifted, in an effort to achieve a match between their interests and abilities and their educational programming. The theme of the first issue is "Entering Academic Competitions." It describes selected competitions from a variety of academic areas. The second issue, "Planning Ahead for College," discusses what college admissions officers are looking for, describes four types of undergraduate environments, and outlines financial aid procedures. The third issue, "Choosing Academic Summer Programs," offers a student's perspective and provides a directory of summer opportunities. The fourth issue, "Getting the Best Precollege Education," discusses choosing a high school, considering early college entrance, advanced placement programs, and ability grouping. The final issue, "Exploring Career Options," discusses multipotentiality, career indecision, and mentorships and lists sources of career information. A regular feature of each issue is a student's review of a university. Universities reviewed include Stanford University (California), Washington University (Missouri), Johns Hopkins University (Maryland), Yale University (Connecticut), and Brown University (Rhode Island). Other regular features include stories, poems, book reviews, and puzzles created by talented youth. (JDD)

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ED 375 535

Imagine...
Opportunities and Resources for Academically Talented Youth
Volume 1
Numbers 1-5

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VOLUME 1 • NUMBER 1

ImaGiNe...

Opportunities and Resources for Academically Talented Youth

September/October 1993

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Spotlight On:

ENTERING ACADEMIC COMPETITIONS

Members of the Iowa ARML team consult with their coach during the Relay Round of the national competition at the University of Iowa (See p. 5)

Photo by Genna S. Herron, courtesy of the Connie Belin National Center for Gifted Education

Why enter a competition? Just imagine yourself in an activity where you could:

- Explore new intellectual paths, or delve more deeply into a subject that already interests you.
- Enjoy the thrill of the chase, yet know you're a winner no matter where you finish.
- Experience the camaraderie of being with others who are as bright and turned on by learning as you are.

Sound appealing? Then you're in for a treat. With so many excellent competitions from which to choose, you're sure to find one—or more—just suited to your own particular style.

Academic competitions are available in many different formats. In some, you compete as an individual by taking a single test; in others, you compete as part of a team in a series of events. Some are conducted by mail, by computer, in your own school; others, especially at the state or national level, involve travel to central sites around the country.

Yet what competitions all have in common is their ability to stimulate academically talented students who are looking for an intellectual challenge outside the school curriculum.

To whet your appetite, we focus in this issue of *Imagine* on selected competitions from a variety of academic areas. When you see one that interests you, find out if your school or larger community already participates. If not, send or call for information on how to initiate this particular competition in your area. Then share the information with your friends, your principal, and teachers who may agree to become coaches.

Combining lots of enthusiasm with some serious preparation, you can create an exciting outlet for your mental energy. *Go for it!*

WELCOME TO *IMAGINE* . . .

a newsletter for precollege students who are seeking opportunities for greater academic challenge . . .

Academically talented students often have difficulty feeling challenged in the regular classroom, particularly today when tight budgets and shifting priorities are contributing to the elimination of "gifted and talented" programs in many districts. Yet students and their parents may be uncertain about where to turn for alternatives.

Helping talented students develop challenging educational plans and locate supplemental opportunities has been a major focus of the Study of Mathematically Precocious Youth (SMPY) since 1971, under the pioneering direction of Professor Julian C. Stanley at The Johns Hopkins University. This activity is now the primary mission of SMPY's successor, the Study of Exceptional Talent (SET) at the Johns Hopkins Center for Talented Youth (CTY).

The philosophy of both SMPY and SET recognizes that no one program is capable of meeting *all* the needs of *all* academically talented students, nor do we believe that learning should be limited to what occurs in school.

Each student is unique. Each has individual abilities and learning styles, and these differences should be recognized and respected. Intellectual, social, and emotional maturity may not all proceed at the same rate. Specific strengths, weaknesses, interests, personality, and motivation—as well as resources available in the home, school, and community—all should be considered in designing a program to meet a student's needs.

Drawing upon twenty years of experience, the SET staff has developed *Imagine* as a periodic newsletter that will provide the kind of information students need to achieve an "optimal match" between their interests and abilities and their educational programming. *Imagine* will explore the full range of possible options, including subject-matter acceleration or grade skipping, independent study, correspondence courses, mentorships and internships, and specialized extracurricular activities such as academic competitions, foreign study and travel, and academic summer programs.

Five issues of *Imagine* will be published during the 1993-94 school year, each with a different primary focus:

- September/October **Entering Academic Competitions**
- November/December **Planning Ahead for College**
- January/February **Choosing Academic Summer Programs**
- March/April **Getting the Best Precollege Education**
- May/June **Exploring Career Options**

Our intention is to provide the tools students need to enable them to take responsibility for their own learning, reach for academic excellence, and achieve to the full extent of their individual capabilities. We welcome comments and suggestions from our readers.

Dear Readers, we'd like to hear from you. Send us your ideas for articles, or questions to be answered by the *Imagine* staff in an on-going Mailbag column. Students, submit your creative work—poems, brain teasers, shorts stories/essays/book reviews. Tell us about academic programs that have challenged you or paths you have devised for your own intellectual growth.

Please write to:
Imagine
SET at CTY
The Johns Hopkins University
Baltimore, MD 21218-9985

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Opportunities and Resources for Academically Talented Youth

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September/October 1993

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Imagine is published by the Johns Hopkins University Press for the Study of Exceptional Talent (SET) at the Johns Hopkins Center for Talented Youth (CTY). This publication is an outgrowth of newsletters and programs that have served highly talented students identified by SET and the Study of Mathematically Precocious Youth (SMPY) for more than twenty years.

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Foundation for Scholastic Advancement

- Grades 9-12
- 4 exams—mathematics, English, history, and science (biology, chemistry, and physics).
- Students set own pace in initial individual round, then combine as 3-member teams for team rounds and pressure rounds. Strategy and teamwork highlighted, in addition to subject knowledge.
- Each subject contest is held once in academic year: mathematics, 2nd week January; English, 2nd week February; history, early March; science, late March-early April. (Teachers may request change in test date if conflicts arise.)
- Teachers must register their schools for each contest at least 6-8 weeks before test date.
- Fee: $30 per subject; exams may be copied for each participant in school.
- Recognition on school and national level for each subject; certificates and ribbons for school winners; school plaques, team certificates and medals for top 10 teams in nation.

Future Problem Solving Program (FPS)

- Grades 7-9, Intermediate Division; grades 10-12, Senior Division
- Complex scientific and social problems of the future solved by six-step process requiring critical thinking, research, creativity, communication skills, and teamwork.
- 4-person teams complete 3 problem booklets during academic year—2 for practice, 1 for competition. Teams receive evaluations of each booklet submitted, a newsletter subscription, and consultant assistance. Teams with best performance on qualifying problem compete at State Bowls in spring; winners invited to International FPS.
- Booklets due October, January, March; State FPS, spring; International Conference, June.
- Fee: $100 per team
- Also Community Problem Solving Division, Scenario Writing Contest, and Primary Division for younger students.

Knowledge Master Open

- Two divisions: middle/junior high, high school
- Higher-level thinking skills and knowledge across range of curricula, including world history, geography, literature, math, sciences, art, and music.
- One team (any number) per school; requires use of one Apple II, Macintosh, or IBM (MS-DOS) computer for disk with 200 multiple-choice questions (2-3 hours); scores based on accuracy and speed.
- December 8, 1993, and April 20, 1994
- Fee: $32 for one date, $48 for both
- Additional educational software available, including short-answer intramural competitions, Knowledge Bowl (grades 9-12), and Academic Bowl (grades 6-8).

National Geography Bee

- Grades 4-8
- Political, physical, economic, cultural, and environmental components.
- Students compete in oral school Bees; school winner takes written qualifying exam; 100 top scorers compete in state or territory Bee; winners go to nationals.
- School principals must register by October 15. School Bees held December 13, 1993-January 14, 1994; state/territory Bees, April 8, 1994; nationals in Washington, DC, May 24-25, 1994.
- Fee: None
- Top three national winners receive college scholarships of $25,000, $15,000, and $10,000.

FIRST & 1ST!

This year, the United States competed for the first time in the International Geography Bee and came in 1st! The United Kingdom placed 2nd, Russia 3rd, during the competition held in London in June. The US team included Noel Erinjeri (MI), Michael Ring (RI), Jeffrey Hoppes (PA), and alternate Jory Hecht (CA).

Texaco Star National Academic Championship

- Grades 9-12
- *To be eligible, teams must have won an academic competition involving at least 16 schools.* Teams are composed of 4 starters, 2 alternates, 1 or 2 coaches (one must be a school employee).
- Emphasis on quick recall; copyrighted 4-quarter format created by Questions Unlimited.
- June 4-10, 1994, at Rice University
- Fee: $175 per person, includes room and board
- $75,000 in Texaco Foundation scholarships; number of participating teams is limited, so register promptly.

United States Academic Decathlon

- Grades 9-12
- 10 events: language and literature, mathematics, science, economics, fine arts, social science, speech, interview, essay, and Super Quiz.
- 9-member school teams composed of students with A, B, and C averages; all students compete in all events against others in their category.
- Check with your state director for registration deadline. Practice Test Booklet released, teams formed, September; local competitions, November; regional, February; state, March; national finals, April.
- Fee varies by state; call or write for name of your state director.
- In nationals, gold, silver, and bronze medalists receive $5000, $3000, $2000 scholarships. National Finals 1994 will be held in Newark, NY.

> *"Participate in competitions, especially those that bring together students from a wide area. Often, the conversations you have at these events increase your knowledge and interest as much as a professor's lecture."**

Foundation for Scholastic Advancement
PO Box 3340
Iowa City, IA 52244
(312) 464-4812

Future Problem Solving Program
315 W. Huron
Suite 140-B
Ann Arbor, MI 48103-4203
(313) 998-7377

Knowledge Open
Academic Hallmarks
Box 998
Durango, CO 81302
(800) 321-9218

National Geography Bee
National Geographic Society
1145-17th Street, NW
Washington, DC 20036
(202) 828-6659

Texaco Star Championship
National Academic Association
Chip Beall, Executive Director
8334 Breckenridge Way
Columbus, Ohio 43235
(614) 848-5113

United States Academic Decathlon
11145-183rd Street
PO Box 5169
Cerritos, CA 90701-5169
(310) 809-4995

** Students quoted throughout participated in academic competitions while in 7th-12th grades*

> ***"Junior Classical League chapters, which usually double as Latin Clubs, exist in thousands of middle and high schools across the country. The League consists of dues-paying students with an interest in matters Greek and Roman. All in all, JCL serves as a much-needed supplement to the classical curriculum."***

NCTE Achievement Awards in Writing
1111 W. Kenyon Road
Urbana, IL 61801-1096

National Federation of Press Women High School Journalism Contest
Headquarters Office
PO Box 99
Blue Springs, MO 64013
(816) 229-1666

National Peace Essay Contest
United States Institute of Peace
1550 M Street, NW, Suite 700
Washington, DC 20005-1708
(202) 429-3846

Quill and Scroll Society International Writing and Photography Contest
School of Journalism, University of Iowa
Iowa City, IA 52242
(319) 335-5795

German Testing & Awards Program
American Association of Teachers of German
112 Haddontowne Ct. #104
Cherry Hill, NJ 08034
(609) 795-5553

Le Grand Concours
National French Contest
American Association of Teachers of French
Box 1178
Long Beach, NY 11561

National Greek Exam
American Classical League
Miami University
Oxford, OH 45056

National Latin Exam
American Classical League/
National Junior Classical League
PO Box 95
Mount Vernon, VA 22121

National Council of Teachers of English Achievement Awards in Writing

- For US and Canadian students who are juniors in 1993-94 academic year and will graduate in 1995.
- Each high school selects its own nominee/s (number based on total 10th-12th grade enrollment). One criterion suggested by NCTE is whether the writer exhibits the power to inform and move an audience through use of the English language.
- Nominees submit two written compositions—an impromptu theme on NCTE-designated topic written under teacher supervision in no more than 75 minutes, and a writing sample the student considers his/her best work.
- Nomination deadline, January 23, 1994; impromptu theme topic and instructions sent to designated teacher in March; writing entries deadline, April 21, 1994.
- Fee: None
- Up to 876 awards are announced in October of students' senior year. Winners receive certificates of commendation, and their names are sent to 3,000 US colleges and universities with recommendations for admission and financial aid.
- Winners and nominees may also submit their work to Scholastic Writing Awards. For official rules booklet, write to Scholastic Writing Awards, 730 Broadway, New York, NY 10003.

National Federation of Press Women High School Journalism Contest

- Grades 9-12
- Categories include feature, news, sports writing, and photography; additional categories will be announced for this year's competition.
- Local contests are held by state affiliates; winners advance to national contest.
- Fees and deadlines are set by state affiliates; call or write for state contact.

National Peace Essay Contest

- Grades 9-12
- Sponsored by independent, nonpartisan federal institution.
- Students, who participate as members of club with adult coordinator, receive specific instructions and suggestions for writing a successful essay.
- Deadline to submit essay with registration form, February.
- Fee: None
- Award-winning essays are published in contest yearbook. Top essayists at state level receive expenses-paid trip to Washington, DC; winners at national level win college scholarships of $500 to $10,000.

Scripps Howard National Spelling Bee

Call your local newspaper to ask whether they participate in this regional and national competition and how you may enter locally.

Quill and Scroll International Writing and Photography Contest

- Junior and senior high divisions
- 8 junior high divisions: editorial, cartoon, news story, feature story, general column, sports story, photography/feature, photography/sports.
10 senior high divisions: editorial, editorial cartoon, news story, photography/news feature, general column, photography/sports, feature story, in-depth story about individual or team, advertisement, sports story.
- Submissions must have been published in a school, local, or national newspaper during the period February 6, 1993-February 5, 1994.
- Entry forms are sent to high schools in late November; forms also published in *Quill and Scroll* magazine. Register by February 5, 1994.
- Fee: $2 per entry, maximum two per division.
- Winners receive gold key charm and letter of recognition, and are eligible as seniors to apply for college scholarships if they plan to major in an accredited journalism program.

National German Test

- Students enrolled in German II-IV
- Listening comprehension, reading and conversational skills, applied structure and grammar, comprehension of connected passages.
- 100 multiple-choice items, 65 minutes.
- Information sent to German teachers, October; deadline for orders and fees, December 1; test, between mid-December and mid-January.
- Fee: $4 per student
- Students scoring 90% or more are eligible to apply for month-long travel-study summer program in Germany, all expenses paid; awards ceremonies, some book/cash prizes.

National Latin Exam

- Students enrolled in Latin I-V
- Latin I-IV: grammar, mythology, culture, history, derivatives, questions on short passage in Latin. Latin V: comprehension, grammar, historical background, classical literature.
- 40-minute multiple choice exams for each level.
- Registration deadline, January 10, 1994; testing in schools, March 7-11, 1994.
- Teacher registration, $3 per student.
- Gold and silver medals and certificates go to winners. Gold medal winners in Latin III-V who are high school seniors are eligible to apply for $1,000 scholarships if they agree to take at least one year of Latin or classical Greek in college.
- The American Classical League also sponsors state and national conventions with competitions in Greek and Latin, classical art, drama, and oratory. Next national convention to be held at the University of Tennessee, August 1994.

American Junior High School Mathematics Examination (AJHSME)*

- Grades 8 and below
- Arithmetic of integers, fractions and decimals, percent and proportion, number theory, informal geometry, perimeter, area, volume, probability and statistics, and logical reasoning.
- Written 40-minute, 25-question, multiple-choice examination given at area schools.
- School registration, October; exams given 1st Thursday after Thanksgiving.
- Fee: $10/school, plus $15/packet of 25 exams.
- Good preparation for AHSME.

American High School Mathematics Examination (AHSME)*

- Grades 12 and below
- Non-calculus secondary school mathematics.
- 30 multiple-choice questions, 1-1/2 hours.
- Schools register, January; test, February-March.
- $15/school, plus $7.50/packet of 10 exams.
- Students scoring 100 are eligible for AIME.

American Invitational Mathematics Examination (AIME)

- All students in US and Canada who score at least 100 on AHSME are invited to participate.
- 3-hour exam of 15 questions requiring integer answers from 0 to 999; non-calculus secondary school mathematics.
- Exam given three weeks after AHSME.
- Fee: None
- Up to 140 highest scorers move on to the USA Mathematical Olympiad (USAMO) exam, late April: 5 essay/proof questions requiring deep insight and ingenuity; 3-1/2 hours. Top 8 scorers and their parents are honored in Washington, DC; then with 16 selected others attend the 4-week Mathematical Olympiad Training Session (MOTS), held at the US Naval Academy or US Military Academy. Finally, 6 are chosen for US team to the International Mathematical Olympiad (IMO).

IMO 1993

Students from 50 nations competed in Istanbul, Turkey, July 13-24. The top 10 teams (in rank order) were China, Germany, Bulgaria, Russia, Taiwan, Iran, USA, Hungary, Viet Nam, and the Czech Republic. All 6 on US team won medals: Andrew Dittmer (VA) and Lenhard Ng (NC), gold; Wei-Hwa Huang (MD) and Stephen Wang (IL), silver; Jeremy Bem (NY) and Tim Chklovski (MN), bronze.

MATHCOUNTS

- Grades 7 & 8
- Progressively difficult items testing mathematical accuracy, reasoning, and problem solving. Timed written and oral components; multiple rounds of individual and team competitions.
- Schools register for competition phase by November 15, 1993 (late registration, January 14, 1994); coaching, September-February; school team selection (4 students per school) and chapter competitions, February; state competitions, March; national competition, May 1994.
- Fee: $30 per school
- Top 4 students in each state competition win all-expenses-paid trip to Washington, DC, for nationals; 1st, 2nd, and 3rd place national winners receive $8,000, $6,000, $4,000 college scholarships; winner of written portion and winning team members each receive $2,000 scholarship.

Helpful Hint:

■ One excellent way to prepare for mathematics competitions is to work on problems from former years. The Mathematical Association of America (MAA) offers problem-solving books from AHSME, AIME, USAMO, and IMO levels, as well as from the college-level Putnam competition. Write to or call MAA for a catalog.

MATHCOUNTS problems are available from the MATHCOUNTS Foundation.

American Regions Math League (ARML)

- Grades 9-12
- National competition among teams composed of 15 students plus 2 alternates, locally chosen to represent counties, cities, or states. Held simultaneously at Pennsylvania State University and University of Iowa on the first Saturday after Memorial Day.
- Fee: (to be set in March; about $45 including room and board)
- Prizes of books, calculators, trophies; some small cash awards.

National Mathematics League

- Grades 6-12
- 7 divisions: sixth grade, pre-algebra, algebra I, algebra II, geometry, precalculus, calculator.
- For each of 5 contests in 7 divisions, 6 open-answer problems in 30-minute exam.
- Entry deadline for schools, October; 5 separate contests held in school, January-April.
- Fee: $40 per contest division
- Schools informed of cumulative results; ribbons for student winners, plaques for schools.

> *"The math competitions in which I had the opportunity to travel and meet other students were especially exciting to me since they introduced me to what I call 'the world of mathematics.'"*
>
> *"Math contests make math seem more fun and pique one's desire to do more than ordinary math. They encourage elegance and creativity, without which contest problems are designed to be unsolvable."*

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registration questions only:
MATHCOUNTS Registration
P.O. Box 441
Annapolis Junction, MD 20701
(301) 498-6141

all other questions:
MATHCOUNTS Foundation
National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314-2794
(703) 684-2828

***American Mathematics Competitions**
Dr. Walter E. Mientka, AMC Director
Department of Mathematics and Statistics
University of Nebraska
1740 Vine Street
Lincoln, NE 68588-0658
(402) 472-2257

American Regions Math League
Mark E. Saul, ARML President
711 Amsterdam Avenue
New York, NY 10025
(212) 666-5188
or
Barbara Rockow
ARML Corresponding Secretary
Bronx High School of Science
75 West 205th Street
Bronx, NY 10468
(718) 295-0200

National Mathematics League
Box 9459
Coral Springs, FL 33075
(305) 344-8980

MAA Publications:
Mathematical Association of America
1529-18th Street, NW
Washington, DC 20036
(202) 387-5200

**If your school does not participate in the American Mathematics Competitions, contact Dr. Mientka for information on taking tests through another school in your area.*

> *"There was never really one specific moment when I chose math/science; my love for math and science has developed gradually. The Science Fair was one of the most mathematically healthy experiences I've had. It was really the first time I'd picked out a project and worked on it all on my own."*

JETS TEAMS
1420 King Street
Suite 405
Alexandria, VA 22314-2794
(703) 548-5387

International Science and Engineering Fair
Science Service, Inc.
1719 N Street, NW
Washington, DC 20036
(202) 785-2255

US National Chemistry Olympiad
Education Division
American Chemical Society
1155-16th Street, NW
Washington, DC 20036
(202) 872-6328

Westinghouse Science Talent Search
Science Service, Inc.
1719 N Street, NW
Washington, DC 20036
(202) 785-2255

JETS TEAMS

Tests of Engineering Aptitude, Mathematics, and Science (TEAMS), sponsored by Junior Engineering Technical Society (JETS)

- Grades 9-12
- Engineering problems to be solved using mathematics, chemistry, physics, biology, visual interpretation of information, computer applications, and reading analysis and interpretation.
- Revised format for '94: one-day national event consisting of 2 parts, 1-1/2 hours each, held at various locations in each state. Varsity engineering teams of 4-8 students work together to answer both objective (state level) and subjective, open-ended (national level) questions. One varsity team per school; junior varsity teams may participate, but are not eligible for national awards. Teams compete in divisions based on size and type of school.
- Registration deadline, fee, and exact event date (between February 6 and March 19, 1994) are set by local/state competition hosts.
- JETS also sponsors the National Engineering Aptitude Search (NEAS), a guidance test measuring mathematical understanding, scientific reading and reasoning ability, and conceptual problem solving strengths; and the National Engineering Design Challenge (NEDC), involving real-life applications of engineering concepts used to design and build a product for a specific need.

International Science and Engineering Fair (ISEF)

- Grades 9-12
- *To participate, student or team must have been a finalist in ISEF-affiliated regional or state fair.* (If your school is not involved in science fair activities, write to ISEF for name of your area fair director.)
- Students display project and discuss mutual interests with over 1,000 judges and more than 750 other contestants; also visit area universities, research centers, industry, cultural/historical sites.
- May 8-14, 1994, in Birmingham, Alabama.
- Fee: None; students and their official parties receive all-expenses-paid trip to ISEF.
- Over 600 Grand and Special Awards in specific disciplines are supported by corporations, foundations, federal agencies, industrial organizations, and Science Service; such awards include college scholarships, computers, and overseas trips, including one to the Nobel Prize Ceremony in Stockholm, Sweden.

Science Service, sponsor of both the ISEF and Westinghouse Science Talent Search, offers a *Directory of Student Science Training Programs for Precollege Students* ($3). See address to order.

US National Chemistry Olympiad (USNCO)

- Grades 9-12 (US citizens)
- Local American Chemical Society sections identify outstanding students for national exam (limit 2 students per school). Consult your chemistry teacher about local process.
- 2 sections, multiple choice and essay; 4 hours.
- National test, April
- Fee: None
- Top-scoring 20 students attend two-week study camp at US Air Force Academy in June. Then, 4 students are chosen for US team to International Chemistry Olympiad (IChO).

1993 IChO & IPO

At the 25th IChO held this July in Perugia, Italy, teams from 38 countries competed. The US team was one of three top winners, with the People's Republic of China and Taiwan. All US team members won medals: Christopher Herzog (NJ) and Daniel Katz (CA), gold; David Hutz (PA) and Robert West (MO), silver. Next year's IChO will be held in Norway.

Also in July, the 24th International Physics Olympiad (IPO) took place in Williamsburg, Virginia, with teams from 42 countries. US team members were Dean Jens (gold medal), Daniel Schepler (silver), Hal J. Burch and Dmitri Linde (bronze), and Chang Shih Chan (honorable mention).

Westinghouse Science Talent Search

- Grade 12 only
- Independent research project in physical sciences, behavioral/social sciences, engineering, mathematics, or biological sciences (excluding live vertebrate experimentation).
- Student submits written report, with school transcript, test scores, and teacher recommendations; 300 honors semifinalists; 40 invited as finalists to 5-day Science Talent Institute.
- Entry materials available in August; entry deadline, December 1, 1993; semifinalists and finalists announced, January; Science Talent Institute, March 1994.
- Fee: None
- All-expenses-paid Science Talent Institute in Washington, DC, includes public exhibition of projects, meetings with distinguished scientists and public officials, sightseeing, and awards banquet and ceremony. Top 10 winners receive college scholarships of $10,000-$40,000; remaining 30 receive $1,000 scholarships.

COMPUTER SCIENCE/OTHERS

ACSL Computer Science Contest

- Grades 7-12
- 4 competitions a year for school teams only; 3- or 5-member teams compete in their own school against other teams in their division across the country; top 15% invited to All-Star national competition at site to be announced.
- Teachers register schools, December 1.
- Fee: $125 per school
- Trophies and plaques to top-scoring teams and students; national All-Star winners earn personal computers, computer-related books and magazines.

USA Computing Olympiad (USACO)

- Replaces International Computer Problem Solving Contest (ICPSC).
- Grades 9-12
- Algorithmic computer problem solving in limited time.
- Qualifying Round at schools, 5 problems; students who solve at least 3 qualify for 5-hour Competition Round of one problem. Top 15 nationally are invited to week-long USACO at University of Wisconsin-Parkside.
- School coordinator registers at least one week before Qualifying Round, February; Competition Round, March; USACO, June.
- Fee: 1st round free; 2nd, to be determined
- Top 4 students and one alternate from USACO form US team to International Olympiad in Informatics (IOI). The '93 IOI will be held in Argentina this October.

Toshiba/NSTA ExploraVision Awards Program

- Grades 7-9, 10-12 (also younger divisions).
- Students use their imaginations and tools of science and technology to create and explore a vision 20 years into the future. Sections include history, present and future technology, breakthroughs, and consequences.
- Students work in teams of 4 with teacher-advisor to develop written descriptions and 10 storyboards, as though creating scenes for a video. Regional and national judging; teams advancing to national level receive funds to produce a video presentation.
- Entry kit available, September; ExploraVision entry to NSTA, February 1; national competition in Washington, DC, June.
- Fee: None
- In regional judging, schools of the 48 winning teams receive Toshiba educational products. In national judging, members of 4 winning teams each receive $10,000 US savings bonds; members of 8 runner-up teams each receive $5,000 US savings bonds; schools and teacher-advisors receive Toshiba products.

Duracell/NSTA Scholarship Competition

- Grades 9-12, residents of US or US Territories.
- Panel of scientists and science educators judge entries on creativity, energy efficiency, practicality, and clarity of writing.
- Entrant creates and builds a working device powered by one or more Duracell batteries; sends in photograph, 2-page typewritten description, and wiring diagram with official entry form; 100 selected finalists then send devices to Duracell Headquarters for final judging.
- Deadline for entry, January 21, 1994; finalists submit devices and winners notified, March.
- Fee: None
- All entrants receive gift and certificate; 41 winners receive awards: $100 (25, 4th-place); $500 (10, 3rd-place); $10,000 savings bond (5, 2nd-place); $20,000 savings bond (1, 1st-place). Top 6 winners, their parents, and their teacher/sponsors (who receive personal computers) attend 42nd NSTA National Convention Awards Banquet in Anaheim, California, in April.

United States High School Chess Championship

- Grades K-12
- All participants must be members of USCF; all schools entering team competition must be affiliates of USCF.
- Early entry cutoff is usually 2-3 weeks before the event, to be held April 29-May 1, 1994, at Hyatt Regency Hotel in Dearborn, Michigan.
- Fee: $20 in advance; $40 late registration
- Contact USCF for National Scholastic Entry form; details also in USCF's national magazines.

For information on other competitions, consult these resources:

- The National Association of Secondary School Principals publishes a booklet entitled *NASSP National Advisory List of Contests and Activities*. Their 1993-94 issue is available for $5 plus $3 shipping and handling; send your order with payment to NASSP, 1904 Association Drive, Reston, VA 22091-1537.
- *Science & Math Events: Connecting & Competing* (1990) is published in paperback by the National Science Teachers Association, 1742 Connecticut Avenue, NW, Washington, DC 20009-1171. The charge is $8.50 plus $3.50 for shipping and handling. To order, call (800) 732-6782.

> *"The American Computer Science League competition was one of the most stimulating academic events I was involved in. It increased my interest in both computers and math."*

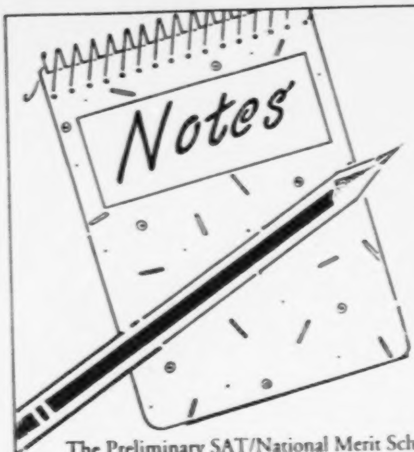
Computer Science Contest
American Computer Science League
PO Box 02940
Providence, RI 02940
(401) 822-4312

USA Computing Olympiad
Dr. Donald T. Piele, USACO Director
University of Wisconsin-Parkside
Box No. 2000
Kenosha, WI 53141-2000
(414) 634-0868

Toshiba/NSTA ExploraVision Awards Program
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009-1171
(202) 328-5800

Duracell/NSTA Scholarship Competition
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009
(202) 328-5800

US Chess Federation (USCF)
186 Route 9W
New Windsor, NY 12553
(914) 562-8350



PSAT/NMSQT AND THE NATIONAL MERIT SCHOLARSHIP PROGRAM:

OPPORTUNITIES NOT TO BE MISSED

The Preliminary SAT/National Merit Scholarship Qualifying Test (PSAT/NMSQT) is offered each October. Useful as practice for the SAT, it also serves as the qualifying examination for National Merit Scholarship Corporation (NMSC) programs *and* as a link to other opportunities.

By now you've probably heard that the College Board is replacing both the PSAT/NMSQT and SAT with new versions designed to enhance the test scores' usefulness. The new PSAT/NMSQT will be introduced this fall. The new SAT, to be profiled in a coming issue, will first be offered next spring.

Format

The new PSAT/NMSQT is divided into four 30-minute sections, alternating verbal and math. The verbal segments still include sentence completions and analogies, but no longer use antonyms. Reading passages are longer, with some paired passages where you are asked to compare different points of view. Sentence completions are used to test vocabulary.

In the math segments, both tests still include multiple-choice questions and quantitative comparisons. In addition, some new open-ended questions require you to record your own answers. The College Board recommends that you bring and use a calculator; the PSAT/NMSQT *Student Bulletin* describes approved and prohibited calculators.

NMSC Programs

The PSAT/NMSQT serves as the screening test for the National Merit Scholarship Program and for the National Achievement Scholarship Program for Outstanding Negro Students. These annual competitions are conducted without government funding by the non-profit NMSC.

Program Eligibility

To be eligible for these programs, you must be a US citizen or a permanent resident in the process of becoming a US citizen, and you must be enrolled full time in a high school.

If you plan to complete high school in the usual four years, the only way you may apply for consideration by these programs is by taking the PSAT/NMSQT in your junior year of high school. (Even if you take the test for practice as a sophomore, you must retake it as a junior.) If you are accelerating your high school studies, you must take the PSAT/NMSQT before you begin full-time college study.

Achievement Scholarships

This year the National Achievement Scholarship Program for Outstanding Negro Students awarded 800 college scholarships (400 "National," 200 corporate-sponsored, and 200 college/university-sponsored awards) to Black Americans. Students eligible for this program must indicate their interest when they take the PSAT/NMSQT. They may be considered for both an Achievement Scholarship and a Merit Scholarship, but winners will receive an offer only in one category.

Find out whether your school will administer this year's PSAT/NMSQT on Tuesday, October 12, or on Saturday, October 16; check with your teacher or counselor to sign up. If you are a high school junior and want to be considered for the 1995 National Merit Scholarship Corporation programs, you *must* take the 1993 PSAT/NMSQT this fall.

Merit Scholarships

Over one million high school students will meet the basic eligibility requirements for the 1995 Merit Program when they take the PSAT/NMSQT this fall. In April 1994, recognition will be given to about 50,000 participants who score highest nationally. At that time these students may name two colleges or universities to whom they want their names sent by NMSC; these institutions respond by providing information about opportunities on their campuses.

Next September, about 35,000 of these 50,000 high scorers will be named Commended Scholars and will not continue in the competition.

The remaining 15,000 students will be named as Semifinalists, based on a selection index that consists of a composite of their PSAT/NMSQT math and verbal scores. At this level, specific cutoff scores vary from state to state; less than half of one percent of any state's high school seniors become Semifinalists.

The Semifinalists then submit additional materials, including high school records, a principal's recommendation, and information about their interests, accomplishments, and goals. Contenders must also receive comparable scores on an SAT.

In February 1995, NMSC will identify about 14,000 Finalists, who will then be considered for Merit Scholarships. After further evaluation, only about 6,500 of the Finalists will actually receive a Merit Scholarship in one of three categories.

- **Corporate-sponsored Merit Scholarships:** Beginning in March, about 1,200 Finalists who satisfy the preferential criteria will be offered corporate-sponsored awards. Most are restricted to Finalists who are children of company employees; some are reserved for those who live in a specific community or who plan to pursue a particular career encouraged by the corporation. Some call for a one-time payment of $2,000. Others, renewable for up to four years, are either fixed-amount stipends ($1,000, $1,500, or $2,000) or variable-amount need-based stipends ($500 or more). *A student offered a corporate-sponsored Merit Scholarship—whether the offer is declined or accepted—will not receive another offer.*

- **National Merit Scholarships:** The only Merit Scholarships correctly designated as "National" are these single-payment awards of $2,000. Beginning in late March 1995, about 2,000 Finalists, competing against others in their state, will be notified that they are winners. *Students who receive this offer will not receive another offer.*

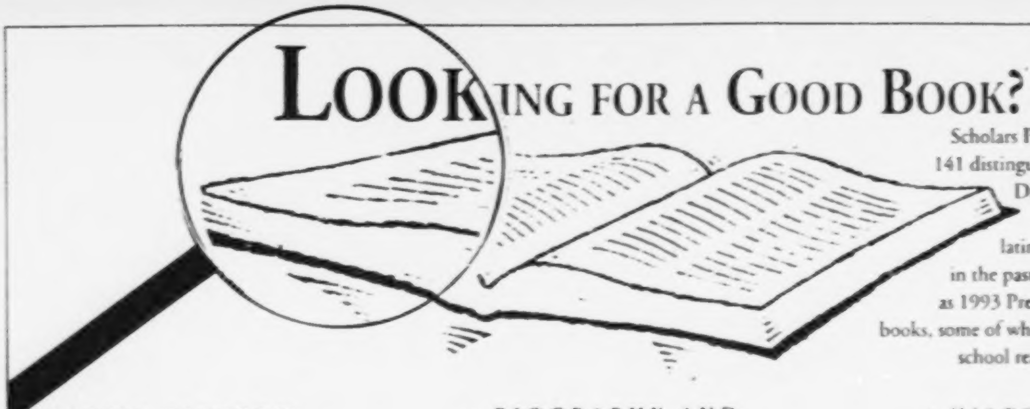
- **College-sponsored Merit Scholarships:** Beginning in mid-April, about 3,300 of these non-transferable scholarships are awarded by participating colleges or universities to Finalists who will attend their institution. Each stipend's value is determined by the granting college, with ranges from $250 to $2,000 per year for up to four years.

To be eligible for college-sponsored Merit Scholarships, qualifying Finalists must have notified NMSC of their interest in a participating college or university by May 30 of their final year in high school. Some of these scholarships are awarded on a first-come, first-served basis, so timing may be critical.

For the most complete information, read the 36-page PSAT/NMSQT *Student Bulletin*, which describes the new test, discusses test-taking strategies, explains correct answers to sample questions, and provides a complete practice test. Also included is a full listing of all NMSC corporate-sponsored and college/university-sponsored scholarships. Copies of the bulletin should be available at your school.

Questions about the PSAT/NMSQT exam?
Call (609) 771-7300.
Questions about the National Merit Scholarship Program?
Call (708) 866-5100.

Looking for a Good Book?



Each year the US Presidential Scholars Program* recognizes and honors up to 141 distinguished graduating high school seniors. During the selection process, applicants are asked to name the most stimulating book they have read outside school in the past six months. The students designated as 1993 Presidential Scholars chose the following books, some of which may be more appropriate for high school readers than for those in middle school.

CLASSIC FICTION

Ambrose Bierce, *Occurrence at Owl Creek Bridge*
Pearl S. Buck, *The Good Earth*
Joseph Conrad, *Heart of Darkness*
Alexandre Dumas, *The Count of Monte Cristo*
Thomas Hardy, *Jude the Obscure*
Nathaniel Hawthorne, *The Scarlet Letter*
Victor Hugo, *Les Misérables*
Aldous Huxley, *Brave New World*
John Milton, *Paradise Lost*
George Orwell, *1984*
Mary Shelley, *Frankenstein*
Leo Tolstoy, *Anna Karenina / The Death of Ivan Ilych*
Voltaire, *Candide*
Edith Wharton, *The Old Maid*

MODERN FICTION

Manilo Argueta, *One Day of Life*
Isaac Asimov, the *Foundation* trilogy
Marlon Z. Bradley, *The Mists of Avalon*
Albert Camus, *The Plague*
Tom Clancy, *The Sum of All Fears*
James Clavell, *Shogun*
Pat Conroy, *The Lords of Discipline*
Ralph Ellison, *Invisible Man*
E.M. Forster, *A Room with a View*
John Fowles, *The Collector*
Nicholas Gage, *Eleni*
Gabriel Garcia Marquez, *One Hundred Years of Solitude*
Neil Gayman, *Good Omens*
John Grisham, *The Firm*
James Gurney, *Dinotopia*
Alex Haley, *Roots*
Hermann Hesse, *Siddhartha*
Stephen King, *The Stand*
Jamaica Kincaid, *A Small Place*
Norman MacLean, *A River Runs through It*
Arthur Miller, *Death of a Salesman*
Margaret Mitchell, *Gone with the Wind*
Toni Morrison, *The Bluest Eye*
Robert Pirsig, *Lila*
Chaim Potok, *The Chosen / My Name is Asher Lev*
Ayn Rand, *The Fountainhead*
Salman Rushdie, *Shame*
Joanna Scott, *Arrogance: The Novel*
Erich Segal, *Doctors*
Art Spiegelman, *Maus*
John Steinbeck, *The Grapes of Wrath*
Amy Tan, *The Joy Luck Club*
Donna Tartt, *The Secret History*
John Kenneth Toole, *Confederacy of Dunces*
Leon Uris, *Exodus*
Robert Penn Warren, *All the King's Men*
Elie Wiesel, *Night*
Richard Wright, *Native Son*

Send us your reading recommendations for future issues!

BIOGRAPHY AND AUTOBIOGRAPHY

James Farmer, *Lay Bare the Heart*
Richard Feynman, *Surely You're Joking, Mr. Feynman*
Alex Haley, *The Autobiography of Malcolm X*
Zora Neale Hurston, *Dust Tracks on a Road*
Doris Kearns, *Lyndon Johnson and the American Dream*
Gen. Norman H. Schwarzkopf, *It Doesn't Take a Hero*
Cathy Young, *Growing Up in Moscow: Memories of a Soviet Girlhood*

PSYCHOLOGY, PHILOSOPHY, CONTEMPLATIVE, INSPIRATIONAL

Richard Bach, *Illusions / Jonathan Livingston Seagull*
Larry Burkett, *Illuminati*
Matthew Fox, *Creation Spirituality*
Kahlil Gibran, *The Prophet*
Jim Harrison, *The Theory and Practice of Rivers* (poetry)
Benjamin Hoff, *The Tao of Pooh*
Anthony Robbins, *Unlimited Power*
Sun Tsu, *The Art of War*
Henry David Thoreau, *Walden*
Naomi Wolf, *The Beauty Myth*

MATH, SCIENCE, AND TECHNOLOGY

James Gleick, *Chaos*
Douglas Hofstadter, *Godel, Escher, Bach: An Eternal Golden Braid*
Stephen Hawking, *A Brief History of Time*
John Pekkanen, *M.D.s: Doctors Talk about Themselves*
Randy Rucker, *Infinity and the Mind*
Oliver Sachs, *Awakenings*
David Suzuki and Peter Knudtson, *Genethics*
Anne G. Tyng, *Simultaneous Randomness and Order*
Russ Walter, *The Secret Guide to Computers*

HISTORY, SOCIOLOGY, POLITICS

Benjamin Barber, *Strong Democracy*
Alexander Bickel, *The Least Dangerous Branch: The Supreme Court at the Bar of Politics*
Will and Ariel Durant, *The Lessons of History*
Susan Faludi, *Backlash*
John Taylor Gatto, "Why Schools Don't Educate" (essay)
E.D. Hirsch, Jr., *Cultural Literacy*
Martin Luther King, Jr., *Why We Can't Wait*
Alex Kotlowitz, *There Are No Children Here*
Nicolo Machiavelli, *The Prince*
David McCullough, *Truman*
Anne Roiphe, *Generation without Memory*
Randy Shilts, *And the Band Played On*
Howard Zinn, *A People's History of the United States*

MAGAZINE ARTICLES

Chandler Burr, "Homosexuality and Biology" *(The Atlantic Monthly)*
Donald Singal, "The Other Crisis in American Education" *(The Atlantic Monthly)*
Robert Wright, "Science, God and Man" *(Time)*
author unidentified, "As Time Runs Out" *(Sports Illustrated)*

**** To receive an application to become a Presidential Scholar, you must take the SAT or ACT any time from October of your junior year to November of your senior year, must score exceptionally well, and must check the box that indicates your interest in the Student Search Service (SAT) or Educational Opportunity Service (ACT). To avoid disappointment, check the box every time you take the test.***

Expository Writing Tutorial-by-Mail

The Expository Writing Tutorial is offered by the Johns Hopkins Center for Talented Youth as a multi-level program that links verbally talented students with professional writers who have teaching experience. Eligibility is based upon SAT-V and TSWE scores, with cut-offs ranging from 380/35 for students who are 13-1/2 years old to 530/50 for those who are 16-1/2. (The SAT need not have been taken through CTY's Talent Search.)

An assigned tutor initially makes an assessment of needs based upon essays the student submits with the EWT application. Then tutor and student exchange assignments and critiques by mail every 10 to 14 days during the school year. At the end of the course, the tutor writes a detailed evaluation of the student's work and progress.

Is EWT right for you? Participants must be highly motivated, intellectually adventuresome, and ready to work. Homework averages 3 to 5 hours per week. The total cost for the '93-'94 school year is $455, including a non-refundable $35 application fee. Need-based aid up to $150 is available.

Applications to EWT will be considered from August 31 to October 2, 1993; late registrations will be accepted on a space-available basis. Applications for scholarship aid must be received by September 25, 1993. If you are interested in becoming an EWT participant, call Ben Reynolds at CTY, (410) 516-0161.

STUDENTS REVIEW: STANFORD

■ ■ ■

College Review Series

Choosing a college or university can be an overwhelming experience, even for talented students who have their choice of many fine institutions. Finding the school that is the best match for you requires weighing many factors: your major interests, financial considerations, location and size of the school, its overall prestige and unique atmosphere, and the reputation of specific departments.

This on-going series is intended to aid prospective college students in their search by offering insiders' views of selected colleges and universities, as expressed by current undergraduates or recent graduates who have exceptionally high academic ability.These students share a general bias in judging undergraduate education: they all have high expectations for a college or university's academic standards, its institutional and instructional flexibility, and its respect for nurturance of emerging talent.

Note that the number of student reviewers is small. Consider their personal perspectives only as one component while you gather factual information and impressions from such other sources as college catalogues, site visits, talks with officials and students on campus, and the advice of your guidance counselor and teachers.

Stanford University

In this issue Stanford University is reviewed by 16 students who major(ed) in math (6), computer science/electrical engineering (5), engineering (other) (1), biology (3), physics (3), and political science (1). (The number of majors exceeds 16 because several students have double majors.) Students' comments appear within quotation marks.

Quality of Academic Instruction for Undergraduates

With one exception, respondents gave high ratings to the overall level of undergraduate instruction. However, the math department was repeatedly singled out for criticism by students in math or math-related majors.

"Overall, the academics are superb. The overall technical (math + physics + engineering) environment is **fantastic.** *The resources and faculty are superb, but it requires individual initiative to take advantage of them. Math instruction was adequate, but not fantastic. I discovered other subjects and therefore did not pursue advanced undergraduate math."*

"The academic resources are excellent. Proximity and close ties to Silicon Valley give us incredible computer facilities. The libraries are big enough to get lost in, and there are ample tutoring resources for students who need help."

"Generally, very good. The main problem is that many courses, particularly introductory and science courses, are extremely large (300 students). These are generally broken down into smaller sections for discussion, but the full class lectures are huge. The quality of the faculty is often excellent, and students willing to make an effort can make good contact with professors."

"Overall, my opinion is that undergraduate teaching needs a great deal of improvement. Stanford is still very much the research institution and currently leaves a lot to be desired in the area of teaching, regardless of the lip-service given. The curriculum and academic resources overall are very good—what one would expect from an Ivy or "top ten" school. It is a great academic environment, but its weak spot is undergraduate teaching; students should realize that they'll have to make up for this with harder work and effort to get the most out of a Stanford education."

"The freshman calculus sequences are downright pitiful; except for one professor, hardly any of the instructors care about the class. This is true of most of the math department; most (although certainly not all) profs are good researchers but horrible teachers. Foreign language cores are exceptionally strong."

"In the math department, instruction is not all that great. Don't get me wrong—it's a topnotch school. It's just that the math department doesn't seem to take good care of its majors. The computer science department is great in comparison. Classes are well-staffed, especially the introductory ones. The department takes good care of its majors and provides lots of benefits and opportunities. Overall, the instruction at Stanford is great."

"In general, Stanford is a very flexible school. For example, they are very generous in handing out credit for AP exams, and you can drop classes any time until 24 hours before the final exam. There isn't as much pressure on grades as I've heard about at Ivy League schools."

Social Life

The focus of social activity at Stanford is the dorms, where numerous cultural and academic events occur as part of the university's "Residential Education" program. Most respondents liked the fact that social life at Stanford is so campus oriented. The Greek system of fraternities and sororities is fairly small. Palo Alto is not a college town. Students desiring the cultural offerings of a big city travel to San Francisco, approximately 30 miles north and accessible by train.

"Unsurpassed. The exposure to intelligent students from all over was incredible. And these students are able to have FUN at the same time as they pursue excellence. The weather, living conditions, open and friendly atmosphere, and social opportunities simply cannot be rivaled. Intramural sports are extremely popular, and the Bay Area is a cultural motherlode."

"Stanford really encourages a relaxed dorm environment, especially during freshman year. It is the rare undergraduate who hasn't found a balance between getting work done and having a good time by the end of freshman year."

"Housing at Stanford is terrific! Not because it's beautiful (although most of it is) and certainly not because the food is good, but because of Residential Education. Your dorm becomes the center of your life, and all 90 people in it are your friends. Most people live in dorms all four years. It's wonderful."

"You can really choose your own lifestyle at Stanford. For example, since I found many in the dorms to be shallow, and since I hated residential education, I decided to live in a co-op. We are quite undisciplined, and it's great."

"Much social life revolves around dorm life; this results in tight friendships freshman year, but can limit scope of interaction as well as privacy. Many jokes about Stanford dating (or rather, the lack thereof). Palo Alto closes at 11 pm; there is no college town whatsoever. Instead, Stanford is a big, self-sufficient campus. Not a highly intellectual atmosphere."

What Do You Like Best About Stanford?

"The interaction with other intelligent students who are broad-based enough to pursue other interests (sports, music, the arts) and are able to relax and have a good time. College is not about four years of problem sets, GPAs, and exams. It's about **learning** *and* **growing.** *I am convinced that nowhere else would I have found the combination of academic excellence and opportunities for personal and social growth that I found at Stanford."*

"Academically, the thing I liked best about Stanford was its **balance.** *It has world-class departments in math, science, and engineering, as well as in fields such as economics, English, political science, and history. Also, the good weather year-round makes it easy to unwind with a game of basketball or Ultimate Frisbee after a day in class or in the lab."*

"The atmosphere was fantastic—smart students, but not competitive overachievers. Most are satisfied in finding their own niche and being friendly with everyone else, even if they are striving toward the same goal. A friend who visited during our finals observed, 'Stanford is more relaxed and stress free during finals than Harvard was on any weekend.'"

What Do You Like Least About Stanford?

"Having to leave."

"It's hard. Even now, as a sophomore, I'm less than confident in courses outside the sciences. Also, a lot of the students seem too materialistic."

"In part due to the large, isolated campus and the academic emphasis/intensity that stems from its reputation, I find too many people who don't have any sense or perspective of real life. What's lacking sometimes is an interest or passion in activities or events that goes beyond Stanford's campus."

"I think that, because Stanford is such a great place, some people fall into the trap of thinking that it's the only place—the center of the universe. Having been out of school made me realize that life without Stanford does continue and that I can have a great time away from 'The Big Taco Bell.'"

Who Would Be Most Compatible with the Academic and Social Atmosphere at Stanford?

The responses suggest that students who are highly intelligent and responsible, but somewhat mellow, would most enjoy Stanford.

"I think that, to get the most out of Stanford, you have to be a little laid back. Stanford is not really the place for cut-throat academic competition. The students here, though they worry about grades (who doesn't!), don't take it to the extreme that students at some schools do."

Stanford University
Stanford, California 94305
(415) 723-2091

- 4-year private coed university
- Suburban campus in large town, Palo Alto, 29 miles south of San Francisco.
- Quarter system, extensive summer session, Study Abroad programs.
- Full-time undergraduate enrollment 1993-94: 3,544 men; 3,020 women.
- Special facilities: Observatory, linear accelerator, museum, art gallery, 30 libraries, nature preserve, marine station, instructional television network, Braun Music Center.

"No ultra-intense, bragging, competitive people belong here. It's hard to see yourself as being that way; but if you are the type who is motivated by the thought of being #1, don't come here. It's not that you won't find plenty of competition; it's just that very few people here like to talk about their accomplishments."

"You can go to Stanford and be entrenched in your studies, or you can be totally care-free and enjoy the non-academic life. I think I loved it there so much because I have both sides: I loved being challenged and learning and studying and enriching myself; but I also loved spending lots of time with friends, being involved in school activities, and playing touch football for study breaks."

"Someone with an open mind. Someone willing to take responsibility for him/herself and make important choices. Stanford has a lot of opportunities (academic, extra-curricular, social), but it's up to you to take advantage of them and make your stay worthwhile."

If You Had It To Do Over Again, Would You Go To Stanford?

All respondents answered "Yes" (most with great enthusiasm). Echoing earlier comments, they emphasized the excellence of the whole experience. As one student put it, "I've loved Stanford; it's a great place to *live*."

"Yes. I don't think there is any place else that provides academic excellence in as many areas, with as nice a standard of living, and that is as much fun to attend."

"YES! It would be hard to do better. Where else could you find #1 academic programs with #1 athletic programs? Stanford is Yale academics in a younger environment, with sun, fun, numerous winning teams, and the best people you could ever meet!"

"When I first came, I wasn't sure; my freshman year was so overwhelming. But I've come to value my Stanford experience a lot. The level of academics has pushed me to do my best, and the motivation and achievements of the other students have been inspiring. After high school, I was looking to be challenged, and I think Stanford was a good place to go. I just didn't realize how much better I could be."

"Yes; even given my criticisms of it, it's still the best choice. I personally had to get away from the New England cynicism. Plus, in the end, most things are what you make of them."

"Hmm, good question. On the one hand, if the purpose of college is to gain an education, then 'Yes.' This school, as Pangloss would say, is 'the best of all possible Ivy League schools.' On the other hand, if the purpose of college is to be happy and have fun, then 'No,' I'd go to Chico State instead. Maybe even UCLA."

As you try to find the college or university best suited to you, the views of Stanford presented above may be helpful. Keep in mind that these students might have had similar positive or negative experiences had they attended a different university. At any college, it is important for the individual student to seek out challenging academic experiences and the best professors, and to create a social life that best fits his or her personal style.

Note: The students quoted in the College Review Series are expressing their own views, which are not necessarily those of JHU or CTY.

CREATIVE MINDS ImaGiNe...

Submit your creative work—poems, brain teasers, short stories/essays/book reviews. We look forward to hearing from you. Please write to: *Imagine* • SET at CTY • The Johns Hopkins University • Baltimore, MD 21218-9985

BOOK REVIEW *by Vivian Bush*

To Kill a Mockingbird is a classic novel by Harper Lee, set in the racially tense time and place of Alabama during the Great Depression. It is a story dealing with an age-old problem, the animosity and distance between people of different races and types. It delivers the message that these differences can be overcome with love and understanding.

As the story opens, the narrator, Jean Louise "Scout" Finch, enters the first grade in the local public school and immediately must learn to understand the foreign customs of her classmates from poverty-stricken country homes. After Scout's misunderstanding with her teacher on the first day of school, her father gives her his advice for getting along with all kinds of people all through life: stand in the other person's shoes for just a minute, and get his point of view. This advice allows her to understand others more deeply later in her life.

Scout gets a new perspective on an elderly neighbor, Mrs. Dubose, by watching her struggle against the enemy within herself. Mrs. Dubose is loud, annoying, even abusive, but she has the courage to break herself of a strong morphine addiction, even though it gives her great pain. Scout learns that bravery may come in surprising forms from unexpected people.

When Scout hears the tale of Boo Radley, the neighborhood "ghost," she is terrified of this seemingly inhuman presence so near her home. But time teaches her that he is merely another human being, with eccentric habits, but with a kind heart. He secretly gives her presents, ending with his greatest gift of all: her life. When she finally meets him, she is ready to accept him as an unusual, shy, but devoted friend.

Relations between the Finches and the rest of the town become strained when Atticus Finch, Scout's lawyer father, agrees to defend a black man. The ultimate question is whether the white people of the town will choose the path of justice or of their own prejudice. The Finches struggle for the right cause, but the battle they face is hard.

From these various incidents in the life of a young girl, Harper Lee builds her central theme of acceptance. Only one kind of person is considered unworthy of understanding: he who willingly chooses evil as a way of life. This kind of person is represented in the character of Bob Ewell, the town good-for-nothing who is content to live in the town dump on his neighbors' charity. He is suspected of abusing his children, and eventually attempts murder to get revenge for an imagined wrong.

This book is well written and of great literary quality. It makes its point eloquently and well. It truly deserves the name of classic.

Vivien Bush is a 15-year-old 10th grader being schooled at home in Houston, Texas. She studies clarinet and piano with outside teachers.

CUMIN AND PAPRIKA

by Kaushik Mukherjee

Whenever I smell foreign spices
it is Calcutta in December.
I am sitting on a balcony
reading a book and
watching people walk by.
My grandfather is sitting at a
desk, writing in a Bengali script
I only half-understand.

But that is not my story.
My story is a boy
reading a script he now knows
and mourning the man who wrote it
while, on the stove, cumin and paprika
decorate the dinner which is not quite
cooked.

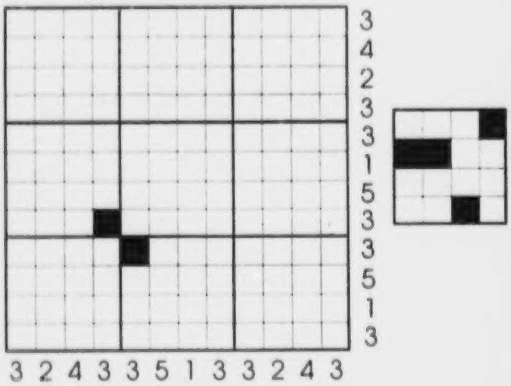
Fourteen-year-old **Kaushik Mukherjee** is a 10th grader living in Cupertino, California. He enjoys participating in math, science, and sports competitions and is an award-winning pianist. One of his poems will soon be published in a book and on audio cassette.

PUZZLES *by Tim Boester*

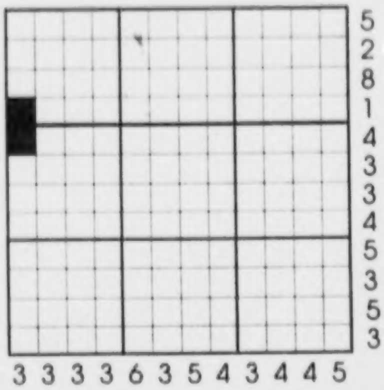
Directions:

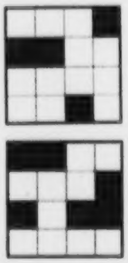
Right: Use the small 4x4 stamp at right to fill in the squares of the large 12x12 grid. The stamp may be rotated so that any of its four sides faces upward. When the grid is correctly filled in, the total number of black squares in a row or column will equal the number found beside or below that row or column.

The squares already blacked in are hints to get you started; they must be black in the completed puzzle.



Left: The rules are the same for this puzzle, except that you may use either of the two stamps to fill in the squares in the grid.





Tim Boester, a senior at Western Reserve Academy in Ohio, enjoys creating puzzles and mazes, more of which will appear in future issues.

VOLUME 1, NUMBER 2

ImaGiNe...

Opportunities and Resources for Academically Talented Youth

November/December 1993

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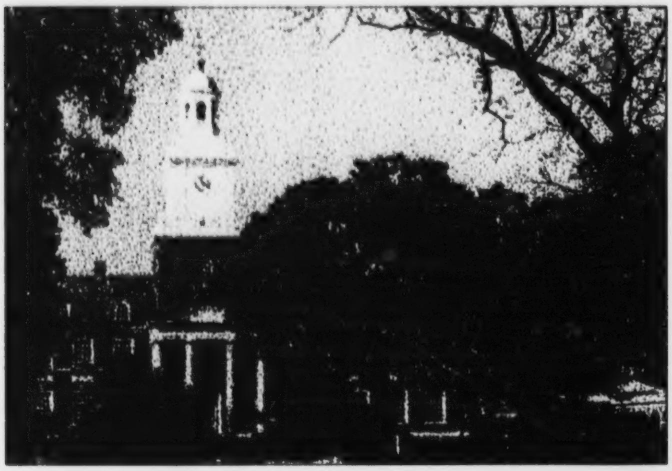
Spotlight On

PLANNING AHEAD FOR COLLEGE



Throughout this issue, one point is repeated: *It's never too early to start thinking about college.* It's never too soon to consider what kind of campus environment appeals to you, to choose the paths that will make your application stand out from the rest, to prepare to pay for college.

In fact, planning ahead for college is essential to ensure that the decisions you make will truly be right for you.

To help answer some of the questions most commonly asked by prospective college students, we went directly to the experts. On the following pages, an admissions officer talks frankly about factors that influence the decision to admit or deny a student. Academically talented students discuss how well their needs are met by undergraduate programs on four different types of college campuses. A recent graduate points out that the quality of your college education depends more on the effort you contribute than on the prestige of the school you attend. And a financial aid officer reviews your options for covering escalating college costs.

Be sure to gather information from many other sources, too. Talk with your guidance counselor and teachers, read the catalogues and brochures that will fill your mailbox, question college students and alumni. Most importantly, think about who you are and what will suit you best. ■

MAILBAG

Q: *I will be finishing all the math courses my high school offers before I'm ready to graduate. What do I do then?*

A: This problem is not unusual. The ideal educational program allows students to move at a pace appropriate to their abilities in each subject area. A student who is highly talented in mathematics is likely to move more quickly through those courses and may further accelerate by taking math in academic summer programs. Such a student may run out of math courses before high school graduation. What's next?

Some students choose to enter college early. Making this decision requires evaluating many factors, including the student's social and emotional maturity and the student's readiness to move into college-level coursework in all subjects, not just in the primary area of strength.

More commonly, students prefer to remain with their age peers. If you want to stay in high school, several options are available:

Consider transferring to a high school with a greater variety of advanced mathematics courses. Investigate magnet schools, state residential high schools, and other public or private high schools that have a fairly high concentration of accelerated students and are therefore likely to offer more advanced mathematics courses.

Enroll part-time in courses at a local college. Of course, being able to exercise this option depends upon having a college in your community and being able to arrange scheduling and transportation. Be sure to evaluate the quality of the courses offered; if the quality is low, you may be forced to repeat the material if you later enroll in a highly selective university. Also, when you are ready to consider a full-time college, investigate policies for credit and placement regarding those courses you took at other colleges when you were in high school. Such policies vary considerably from campus to campus.

Find a mentor who will tutor you individually. In addition to providing advanced math instruction, a mentor can serve as an excellent role model. However, it's unlikely that you will be able to get college credit for your independent study.

Take a correspondence course. A variety of highly respected universities offer college courses by correspondence. You must be highly motivated to work independently on courses by mail, but such a program will provide a structured curriculum and the stronger possibility of getting credit later. Again, credit policies vary depending on the institution.

If other students are also in need of advanced courses, try persuading your school to offer an additional math course or two. Take your proposal to the school administration with a positive attitude; be prepared to discuss their concerns and objections. Cite evidence (if you can back it up) that a reasonable number of students might enroll in the proposed course, drawing from several grades or even several schools. If no one in the school is qualified to teach such a course, offer to find a college professor or another member of the community who would be interested.

If necessary, omit formal math instruction for one year, while pursuing related activities to keep your math skills sharp. We would not recommend that you do this for any period longer than a year. You could take a summer math course, participate in math competitions, do math puzzles and problems on your own, and/or take a science course (such as physics or chemistry) that includes some mathematical applications.

The problem of exhausting the available mathematics curriculum too early has no one solution. Each student's interest and motivation, as well as the available community resources, must be considered before identifying an appropriate course of action. Students who are accelerating rapidly through mathematics in the younger grades are encouraged to plan ahead as much as possible, investigating options and talking to school officials about alternatives before the time comes to make a decision. ■

Extremely mathematically talented students, most of whom were highly accelerated in mathematics, were the subjects of a 1990-91 study that evaluated post-calculus options for high schoolers. See "Mathematics Acceleration of Highly Talented Students: An Evaluation," by E. R. Kolitch and L. E. Brody, The Gifted Child Quarterly, 36(2), Spring 1992, pp. 78-86.

STUDENTS & PARENTS:

Do you have a question about educational placement, subject/grade acceleration, or other concerns relevant to academically talented students? If so, please write to *Imagine*, SET at CTY, The Johns Hopkins University, Baltimore, MD 21218-9985. Some questions may be answered in the Mailbag column, others may become the subject of an article.

SENIORS:

Remember that your entry for the 53rd Westinghouse Science Talent Search must be received before midnight, Wednesday, *December 1, 1993*, by Science Service, 1719 N Street, NW, Washington, DC 20036. See the information in *Imagine*'s September/October issue (p. 6), or call Science Service at (202) 785-2255.

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Opportunities and Resources for Academically Talented Youth

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COLLEGE ADMISSIONS OFFICERS

What Are They Really Looking For, Anyway?

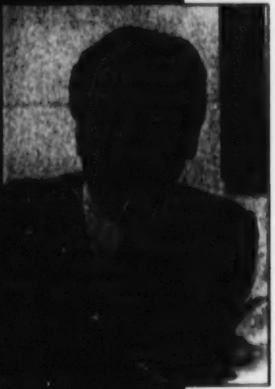
To find out whether SATs are more important than grades, whether many activities are better than one, and what admissions officers are really thinking during the interview, we talked to Richard Fuller, the Director of Admissions at The Johns Hopkins University. He provided the following excellent advice to students trying to survive the stress of the college application process.

BEGINNING EARLY

IMAGINE: *When should students start thinking about college?*

FULLER: It's never too early to start looking. As high school juniors and seniors, students will be bombarded with questions from their families, teachers, and friends: "Do you want to go to a small school or a big one? A campus that's rural or urban?" Unless they've done their research, students will end up giving random answers, just to get people off their backs. They can't know how a mid-sized campus feels until they've visited several.

Begin by visiting colleges in your area, even if you know you want to enroll farther from home. When you're on vacation, take a look at colleges nearby. Every campus that you visit will add to your sense of how colleges differ and can help you choose the college that feels right to you.



IMAGINE: *Should students begin preparing for college as early as middle school?*

FULLER: Students need to understand that the decisions they make in middle school place them on a particular academic track. You should choose your classes carefully, with advice from your parents and guidance counselors, because these choices will determine what you can do later on.

Similarly, becoming involved in an extracurricular activity when you're younger allows you to pursue it more vigorously throughout high school. Showing depth of involvement in one or more activities is better than dabbling in many.

THE HIGH SCHOOL RECORD

IMAGINE: *How important are a student's high school grades?*

FULLER: The transcript is the single most important factor in an admissions decision.

IMAGINE: *What about courses? Many students wonder whether they're better off taking honors courses and risking some* Bs *or taking easier courses and getting straight* As.

FULLER: We look at your transcript as well as your GPA, and we know whether your school gives more weight to honors courses or whether it counts all grades in the same way. So you should take the most challenging course load you can handle. Your schedule can make room for a range of interests; it's fine to take some art classes or home ec. But you still need all the core courses (math, science, history, English, and a foreign language), and those courses need to be challenging. But "challenging" doesn't necessarily mean that you have to take honors courses in every subject.

IMAGINE: *But it's better if you do?*

FULLER: If you can take all honors classes and do well, that's great—as long as you can still have a life. Some students push themselves too hard, trying to impress us; yet we want students who do more than study all the time. What is important is that you take the hardest courses available in the fields you plan to study in college. A future pre-med needs to take the most advanced biology course, for example.

IMAGINE: *What if a school doesn't offer AP Biology, or any honors courses at all? If their high schools aren't academically as demanding as others, students are anxious about being judged against those who may be better prepared.*

FULLER: First of all, the admissions officer who is reading your application knows a lot about the school you're coming from. At selective schools, there is usually an officer in charge of each region of the country, and this officer attempts to become familiar with all the schools in that region. Also, your school will send a high school profile along with your transcript, telling us what courses are offered, the range of SAT scores, and where graduates end up going to college. So we're able to tell how well you've done in relation to your classmates, and that's how we'll judge you.

Many students feel they're at some kind of disadvantage; they think they don't have a chance either because their school is too easy, or because their school is too hard. The best advice I can give is a cliché: you have to play the cards that are dealt you. Do as well as you can at whatever school you're attending.

THE SATs

IMAGINE: *How important are SAT scores?*

FULLER: It varies by school, but they are important; admissions officers do students a disservice when they deny the importance of standardized tests. A highly selective school receives applications from all over the country, from all over the world. A standarized test is the only element that levels the field, that remains a constant through all those applications.

IMAGINE: *How should a student prepare for SATs?*

FULLER: I am not a big proponent of SAT prep courses. I believe students who spend as many hours reading as they would taking a prep course will see equally positive results.

Most high schools provide some SAT instruction, and that should be enough. Taking a practice test to familiarize yourself with the test's format is worthwhile.

IMAGINE: *What should students do if their SAT scores are low?*

FULLER: Try taking the test again, after becoming more comfortable with its format. Test anxiety is a real problem for some students.

If your scores remain fairly low, then it's up to you to present stronger sides of yourself. Visit the colleges that interest you; schedule interviews with admissions officers and alumni; have your teachers and guidance counselor write letters explaining that, even though you don't test very well, you'd still be a great addition to the university.

Also, there's some truth to the claims that the SATs are biased in terms of gender and race. So we're sensitive to that.

EXTRACURRICULAR ACTIVITIES

IMAGINE: *What about extracurricular activities?*

FULLER: It's a common fallacy that we're looking only for well-rounded students; what we're looking for is a well-rounded class. We're more interested in a student who concentrates on a specific activity than in one who gives a little bit of time to a whole list of clubs. For example, someone may study the violin, play in several orchestras, and win awards. We want to see evidence that a student will make a significant contribution to life on campus.

IMAGINE: *What do you think when you see an incredibly long list of activities? How can you tell if students are padding their applications?*

FULLER: There's a fine line between a list that looks impressive and a list that looks made up. It's important that you be completely candid on your application, because the truth almost always comes out. Your guidance counselor may tell us what activities you supported, or one of your letters of recommendation may list the things you really did.

Still, activities can't be verified in the same way that grades and SAT scores can, so we can't give them quite as much weight.

IMAGINE: *What about students who can't participate in many activities because they work?*

FULLER: We understand that working is a financial necessity for some students. If you're working to support yourself or your family, that's commendable. If you're just working to make a little extra money, and are doing it at the expense of extracurricular involvement, you may be hurting yourself in the admissions process.

THE ESSAY

IMAGINE: *What do you look for in an application essay?*

FULLER: We read the essay to get a sense of you as a person; the essay is also your opportunity to show your creative side, as well as your writing skills.

We're always on the lookout for mistakes: misspellings or grammatical errors; an essay that explains why the student desperately wants to attend "Johnson Hopkins" or "Jack Hopkins"; an application, enclosed by accident, to the wrong school! We post the funniest mistakes on our bulletin board, but almost any mistake puts the applicant in jeopardy of being denied.

IMAGINE: *Is it possible to be too creative with the essay? I've heard of a student who, instead of writing the essay, baked a loaf of bread.*

FULLER: Use common sense. It's popular to send videotapes along with your application, the idea being that submitting a videotape or portfolio guarantees acceptance. Well, admissions officers read applications eight hours a day for months; they take them home at night and on weekends. Most of us don't have the time to analyze videos, portfolios, etc. There are better ways for a student to stand out.

[illegible]

IMAGINE: *The idea of the interview makes a lot of students really anxious.*

FULLER: It shouldn't, largely because admissions officers are generally "people who like people." Think of the interview as a conversation, an exchange of ideas between the interviewer and the student. We're not trying to intimidate you or put you on the defensive; we're not going to ask you some strange question out of the blue. You'll never be asked, "If you could be any household appliance, which household appliance would you be?"

IMAGINE: *What if the worst happens? What if a student goes blank and can't think of anything to say?*

FULLER: If that's so, admit it. Just say, "This is only my first (or second) interview, so I'm still a little nervous . . ." or "I've always wanted to go to this school, but now that I'm here, I feel really nervous." Admitting your anxiety often eases it, or at least makes the admissions officer feel more sympathetic.

Also, interviewing at a school that doesn't particularly interest you can be good practice. You'll get a better sense of the kinds of questions that are asked, and you'll learn what it feels like to sit in the waiting room, looking over the literature, waiting to be called in.

IMAGINE: *What about interviews with alumni?*

FULLER: Alumni interviews can be very helpful. If you live in California and are applying to a school on the East Coast, then the alumni who interview you become your link to the school. By making a good impression, you can enlist them as advocates who may intervene with the admissions officers on your behalf. Even if you've already talked with an admissions officer, an alumni interview can still help.

ADMISSIONS AND FINANCIAL AID

IMAGINE: *With a declining number of schools able to guarantee need-blind admissions, some students wonder whether applying for financial aid will hurt their chances of being admitted.*

FULLER: That's a much smaller problem than people think. The admissions process was never completely need-blind: a school might not offer aid to transfer students or to those admitted from its waiting list. Now it's becoming more difficult for colleges to give full aid to all their students—and that's very unfortunate—but it still only affects a few students at the very margins of the class.

IMAGINE: *So it's still safe to apply for financial aid?*

FULLER: Absolutely. If you don't apply for aid, you'll never know what might have been offered.

Financial considerations should never be the most important factor when you're deciding where to apply. You should apply to the schools you think will give you the best education, where you think you'll be happiest. But you can make sure those schools represent a wide range of cost options, and obviously cost will be a factor in your final choice after acceptance.

IMAGINE: *I've heard that applying Early Decision can be a good idea for students who need financial aid, because the college still has a lot of money to award early in the year. But what about students who are admitted under an Early Decision contract and then don't receive the amount of aid that their families require? Do they have to attend?*

FULLER: The contract is meant to be binding, so students should be sure they understand all the conditions of the Early Decision contract before signing. (Early Action programs are generally not binding.) For a rough estimate of the amount of aid they are eligible for/likely to receive, students should provide information about their family income and assets to the college's financial aid office and enter into a dialogue with them. Most aid offices will do this.

EARLY ENTRANCE

IMAGINE: *Some academically talented students have exhausted the courses their high school has to offer and are ready for college entrance by ninth or tenth grade. How does the admissions office evaluate their applications?*

FULLER: When accelerated students apply, we evaluate whether they are ready to live on an urban campus among people who are several years older than they are. We interview parents and guidance counselors as well, to determine whether the students are socially and emotionally ready to join the Hopkins community. We want all students we admit to be able to benefit from, and to make a contribution to, life on campus.

IMAGINE: *And do accelerated students tend to fit into the Hopkins community?*

FULLER: We find nearly all those we accept to be as mature as typical college freshmen, if not more mature. Most of the students we've admitted a few years early have made very important contributions to Hopkins, and we're very glad to have had them here.

REFLE[illegible] ADMI[illegible]

IMAGINE: *What are you looking for when you pick a new freshman class?*

FULLER: We're trying to create a community of different people. First, we admit only those we think can do the work, who belong here academically. But after that, we choose some athletes, some actors, and some artists; some who want to study humanities and some who want to study the sciences. And we select people from a wide variety of cultural backgrounds.

At Hopkins, we're proud of our diversity. If you walk around our campus, you'll see that everyone looks different from everyone else. That makes life here a more genuine learning environment.

IMAGINE: *Do you ever make mistakes?*

FULLER: College admissions is still an art, not a science. Decisions are very easy for us to make at the top 15% and the bottom 15% of the applicant pool, and very difficult to make for the middle 70%. So every year we may admit some people we should have denied, and deny some people we should have admitted. We work hard to minimize these, however.

FINAL ADVICE

IMAGINE: *Any last words of wisdom?*

FULLER: Choosing a college is like viewing a painting: you need to look at it from many different perspectives. If you visit on a day when it's raining, or a day when you're in a bad mood, or even if your family has trouble finding a parking space, you may end up hating the school. So it's important to consider many different perspectives to give your decision balance.

Choosing a college is a major life event, one of the most important decisions you'll ever make. Not as important as birth or marriage or death, but still something you'll remember for the rest of your life. Many older adults can tell you the colleges they applied to, whether or not they were accepted, and why they chose the one they did. I could still tell you my SAT scores—although they might have gone up in my memory a little over the years.

Whenever I speak to groups of students, I give them one last piece of advice: Enjoy your senior year. The college search can be stressful, but you still need to appreciate life. And I'd like to give that same advice to families as well, because once children go off to college, the relationship with parents really changes. Not that it's necessarily worse, but it will definitely never be the same. So, parents and children should really try to enjoy that last year together. ■

WHEN VIDEOTAPES DON'T WORK ANYMORE . . .

THREE GOOD WAYS TO STAND OUT

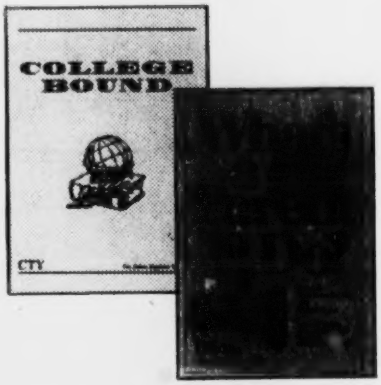
- **Earn good grades**: "This may sound like the advice your grandfather would give you," Fuller says "but a really strong record is the best way to stand out."
- **Prepare for the interview**: Know a lot about the colleges to which you're applying, and ask thoughtful questions. If you seem excited by their school, they'll be excited by you.
- **Write thank-you letters**: Impress them with your manners as you remind them of your interest.

BESIDES MISSPELLING THE SCHOOL'S NAME . . .

FOUR WAYS TO ANNOY AN ADMISSIONS OFFICER

- **Suddenly join lots of activities in your junior year**: "We can see right through that," Fuller warns.
- **Submit an essay you've obviously written for a class at school**: Colleges like to think they're worth the time it takes to write a new essay.
- **Send too many recommendations**: "The quality of the applicant," Fuller says, "tends to be inversely proportional to the number of recommendations."
- **Appear uninterested in or bored by the interview**: If you seem apathetic about them, they will feel apathetic about you.

NEW PUBLICATIONS FROM TALENT SEARCHES



C*ollege Bound* answers questions encountered during the search for college and career. Special features include selected scholarships, guidelines for writing a college essay, and a section on College Board publications. (109 pp.; $10.00)

To order, write to: CTY Publications & Resources, The Johns Hopkins University, Baltimore, MD 21218-9985; or call (410) 516-0245.

◆

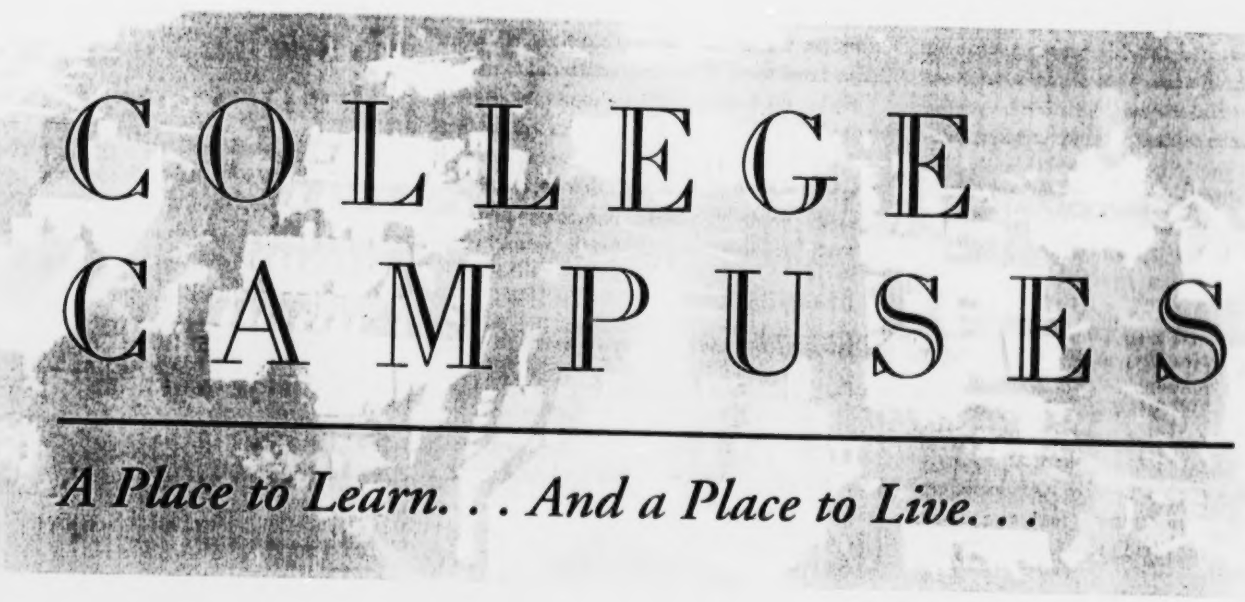
A 40-page college counseling guide, developed by the Center for Talent Development at Northwestern University, is due to be published later this year by the National Research Center on the Gifted and Talented.

To order, write to: NRC/GT at the University of Connecticut, 362 Fairfield Road, U-7, Storrs, CT 06269-2007; or call (303) 486-4826.

◆

What's a Parent to Do? Ideas & Options for Parents of Bright Teens, from Duke University's Talent Identification Program (TIP), advises parents on "how to raise a bright, happy, responsible, and generally wonderful teenager." Chapter 8 discusses "What to Do about Getting into College." (158 pp.; $14.95)

To order, write to: TIP Parent's Guide, c/o Scholar Communications, Inc., 4905 Pine Cone Drive, Suite 1, Durham, NC 27707-9877.



COLLEGE CAMPUSES

A Place to Learn. . . And a Place to Live. . .

Major decisions are never easy, and choosing a college is certainly a major decision in any student's life. The key to making a decision you won't regret is to give the process the careful consideration it deserves. Begin by asking some pertinent questions: When you picture yourself at college, what sort of environment do you have in mind? What surroundings would enable you to live and work most comfortably?

To help you begin your decision-making process, we profile here four types of undergraduate environments: **private universities in urban settings, private colleges in rural settings, public universities,** and **technical institutes.**

Quotes below are taken from surveys of academically talented undergraduates and alumni at the most selective colleges and universities, where students share a high level of achievement and a deep commitment to learning. Do not accept these respondents' comments as definitive; rather, note those aspects of each school that they single out for praise or criticism, and decide how important each of these factors would be for you.

At these top colleges and universities, many students find the outstanding intelligence of their peers both exhilarating and humbling: "Most of all, the students are fantastic: the most brilliant and exciting group I'll probably ever meet (at least in such numbers). Enjoy them rather than being daunted," one student urges. But another, admitting that being one talented student among many is sometimes hard, advises that the best candidate for such an environment would be "someone with academic confidence but not arrogance—arrogance is shattered rather quickly—and someone who knows how to deal with both successes and failures."

PRIVATE UNIVERSITIES IN URBAN SETTINGS

Respondents from Columbia, Harvard, University of Chicago, University of Pennsylvania, and Yale

These universities are large enough to provide students with an exciting array of classes and activities. As one Harvard student noted, "There are thousands (yes, thousands!) of course offerings." For some students, however, the sheer number of choices can be burdensome rather than liberating: "It's very easy to slip through the cracks or let opportunities pass by without even finding out about them because the school is so large and disorganized (like the real world, but richer and smarter)."

These students argue that large private universities are best for "those who can fend for themselves and wish to work with top scholars." In fact, that desire is what brings many students to such schools: they want to be taught by the finest minds in the academic world. "The academic resources are formidable," one student writes. "Professors are not only leaders in their fields but are often *creating* their fields."

Professors who are busy defining their fields, however, may not have much time to devote to teaching. Admitting that he may have had unrealistic expectations about the education he would receive at Harvard, one student finds himself "somewhat disappointed by the teaching of senior faculty, many of whom seem too caught up in their research to pay attention to undergraduates." Yet, as another noted, it may be "neither necessary nor considerate to demand that a Nobel laureate answer your questions on, say, elementary quantum mechanics." This student finds professors to be "accessible if you make the necessary effort" and the TAs (teaching assistants) to be "generally excellent."

Undergraduates at most large universities represent a cross section of cultural backgrounds. One Yale student appreciated "the opportunity to interact with a wide range of people, from a scion of the Rockefellers to immigrants from Viet Nam." For many, this diversity is a valuable part of the education they receive. "I think that Columbia's ethnic diversity is one of its greatest strengths; core courses often give rise to lively and provocative discussions on race relations, historiography, and foreign policy."

For some, living on an urban campus is a very positive part of their college experience: "Chicago is a great city," one student writes; while another notes that "for a motivated, independent, and adventurous young student, New York is an incredible place to be." However, the draw of an exciting city may overshadow campus life, since "most people go into the city rather than stay on campus."

Others feel more ambivalent: "The worst things about being a student at Penn were related to its location—the danger, the panhandlers, and the racial tension all around the campus." Another response is even more blunt: "New Haven stinks. It has all the disadvantages of a big city without any of the advantages." However, another Yale student "found Yale's location in the troubled city to be a crucial part of my educational experience. New Haven prevents Yale from being an isolated enclave of academia and provides many opportunities for involvement in politics and social action."

PRIVATE LIBERAL ARTS COLLEGES IN RURAL SETTINGS

Respondents from Amherst, Dartmouth, and Middlebury

nlike research-oriented large universities, small liberal arts colleges allow professors to devote more of their energies to teaching undergraduates. Most classes are small, and nearly all are taught by professors, rather than graduate assistants. "Amherst serves *only* undergraduates. Only professors teach classes, and it is hard to find a class over 100 (with the average size being 30)."

Smaller class size allows students to have more contact with professors outside the classroom as well. "I spend a good five hours a week in my advisor's office," one student says, "talking not only about my thesis but about any number of issues." Students who can spend this much time with their professors are likely to receive a great deal of academic guidance and emotional support.

Although a smaller student body enables greater involvement between students and professors, a smaller school also means fewer professors, thus fewer available courses. Nevertheless, many students find that course quality more than makes up for lack of variety: "Dartmouth is a small college without the vast array of courses offered by some of the largest universities, but the quality of what they do offer and of the professors who teach them is excellent."

A more limited curriculum poses problems for students who are already accelerated when they begin college, for they may run out of upper-level classes in their major before they graduate. Faculty members may be quite willing to sponsor independent studies for such students, but drawbacks include the lack of peer interaction and the possibility that the quality of instruction may not be as rigorous as that found in more structured classes.

A smaller enrollment also means less variety among students. Many respondents complain that all their classmates seem to come from the same background, although their schools are trying to become more diverse. "There is not a lot of ethnic diversity at Dartmouth or in the area, and I understand that it can be a hard place for minority students to feel at home," one student writes. "Middlebury is cursed with a 'white-bread' student body," another admits, "but I feel that this situation *is* improving—you may just have to work a little harder to find diversity."

Furthermore, one student argues, the environment of a smaller campus can make encounters with different kinds of people more comfortable: "The size and closeness allow for familiarity with your community, better understanding between people, and a chance to meet different people in a family-like setting."

Most students chose these colleges, at least in part, for their lovely and rather isolated settings which make it easy to pursue outdoor activities as vigorously as academics. Dartmouth students are, in the words of one respondent, "people who combine environmentalism and a love of sports with a desire for serious academic pursuit." "The Vermont wilderness is breathtaking," a Middlebury student says. "It's a gorgeous environment in which to live." And she points out that, while the school is forty minutes from the nearest city, "the surroundings of Middlebury are not isolating at all if you love hiking, camping, climbing, skiing."

By definition, rural colleges are isolated from the city—from both its good and bad aspects: "There are no cool nightclubs, no funky ethnic neighborhoods with restaurants, no Metropolitan Museum or Broadway; but there are also no traffic jams, no smog, no crowded apartments, and very little crime." The relative isolation of these colleges causes their students to focus inward, to center their attention and their energies on campus life.

Of course, not all small liberal arts colleges are in rural environments. Swarthmore, Haverford, and Wellesley (to name only three) are in the suburbs of major cities. Their undergraduates enjoy both a small campus and easy access to the culture and entertainment of a large city. A suburban campus, however, cannot provide the full range of outdoor activities available on or near a campus that abuts areas of wilderness.

LARGE PUBLIC UNIVERSITIES

Respondents from the University of California at Berkeley, University of Michigan, University of Washington, and University of Wisconsin

uch universities do not lack for diversity, either in course catalogues or among the student body. And they are both prestigious enough to attract outstanding students and large enough to offer outstanding resources. "Berkeley's education is first-rate. The professors are usually amazing lecturers, both for the instruction they give and for their prowess in their fields." At the University of Wisconsin, "a large variety of interesting courses in nationally-ranked departments is available." Because the University of Washington is so large, another student notes, it "has tremendous resources available to the undergraduate. Libraries and computer facilities, for example, are all topnotch."

Many first- and second-year students, while praising their outstanding professors, complain of difficulty meeting them. Large classes contribute to this problem. "At Berkeley, there is definitely a problem with student/professor relationships. The class sizes for lower-level classes are sometimes ridiculous, running up to seven or eight hundred students." Also contributing to the problem, as one student points out, is the fact that "undergraduate studies are *not* what made the University of Michigan the name it is today." When professors concentrate on teaching graduate students or doing research, undergraduate education may suffer. At Michigan, this student believes, teaching introductory classes "is not interesting to the profs in that field, so the classes are taught in a way designed simply to get everybody through."

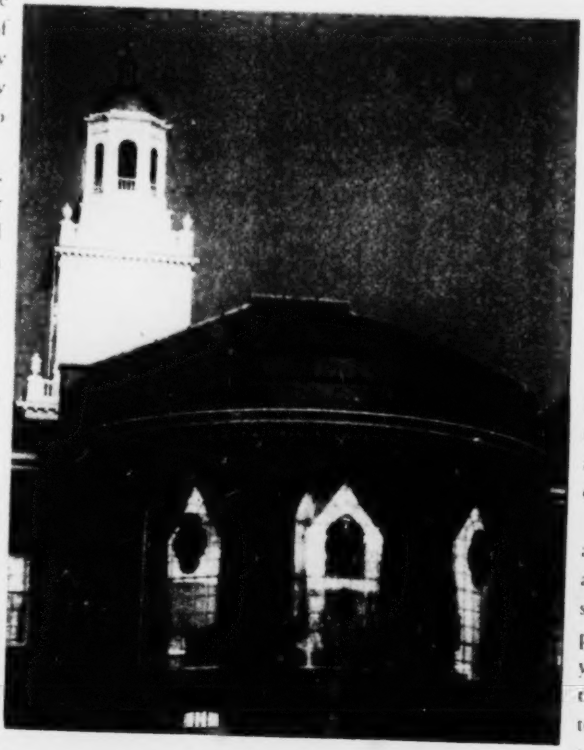
Third- and fourth-year students, however, emphasize that professors are accessible to those who seek them out; and nearly all say that their upper-level courses are well-taught by faculty who are both knowledgeable and engaged. Discussing his own university, one respondent from Berkeley could have been speaking for students at all these schools: "To get the most out of a Berkeley education takes some effort but is well worth your time."

Yet, many students who are willing to make that required effort complain that they don't receive the guidance that would enable them to take full advantage of the opportunities offered. "At Berkeley, you must be very self directed. Advising is often weak, so without a good sense of what you want, it would be easy to get lost in the sea of stuff here."

Often, the range of options available at a large public university can be as intimidating socially as it is academically: "It's very easy to feel lost in a university with 18,000 undergraduates," one student admits. "It can be difficult to find one's niche in a school as large as Michigan." But in a school that large, nearly all students will ultimately find the right niche: "Socially the University of Michigan is *so* diverse, anyone could easily find a place here. There is an outlet for every facet of yourself that you might wish to explore."

Because these universities are so large, they mirror the larger society and offer their students the full range of social, cultural, and academic opportunities: "Berkeley is a microcosm of the real world, one that forces students to face many realities," one student says, and many echo this description.

Large universities expect their undergraduates to assume a great deal of responsibility for their academic and social lives, and students find this expectation to be alternately maturing and daunting. Such schools, as one student describes them, force their students "to be aggressive, because even getting the classes you want requires a certain amount of determination." Yet learning to be more assertive and resolute, others point out, means acquiring the skills that life requires: "Berkeley's first message to a new student is, 'Welcome to the real world.' It's a blessing in disguise. I'm ready for anything now."



TECHNICAL INSTITUTES

Respondents from Caltech and MIT

The best technical institutes offer a distinctive undergraduate experience—one that is more like graduate school in many ways. Although these schools do offer humanities majors, their overwhelming focus on science and technology primarily attracts students who know they want to specialize in science or engineering and who are ready to specialize as undergraduates.

Both physical and intellectual resources at these schools are topnotch; professors are working on the most current problems in their fields and have the most up-to-date equipment. One student praises MIT for the "cutting edge knowledge" it teaches and the "most current technology" it provides. Another refers to the exciting atmosphere, exclaiming, "MIT is where things *happen*, even we lowly undergraduates sense this." As one student notes, researchers who are deeply committed to their subject can be inspiring role models. "There are people at Caltech for whom research truly *is* the guiding passion of their lives."

As at other top research institutions, however, students sometimes find that their professors are busier making things happen than teaching undergraduates about those things: "Our professors are researchers more than teachers. From looking at our course evaluation guide, one would get the impression that the best-taught subjects at MIT are music and Japanese!" A student at Caltech echoed this complaint: "The general attitude I saw among the faculty at Caltech was that teaching was a burden to take on when necessary and to be avoided when possible. A depressing number of Caltech's faculty, while excellent scientists, are average teachers at best."

The intellectual intensity and focus of these schools can be exciting for students who share them. "At Caltech, everyone is science oriented," one student says. "There are many people around who share my views and interests." Others, however, consider it "something of a loss not to be able to get to know and learn from people studying other, dramatically different majors."

The single-minded pursuit of science and engineering can deter students who are still questioning their commitment to those fields. "Someone who is sure about going into engineering will love MIT. If you are on the line trying to decide, MIT will probably turn you off engineering," one student advises. Another found Caltech "a very difficult place to be. 'Intense' barely begins to describe it. Professors, whether they have families or not, tend to work very long days and often weekends, and they expect their students to do the same. This is not necessarily a problem; individuals for whom research truly is the guiding passion of their lives thrive there."

CONCLUSION

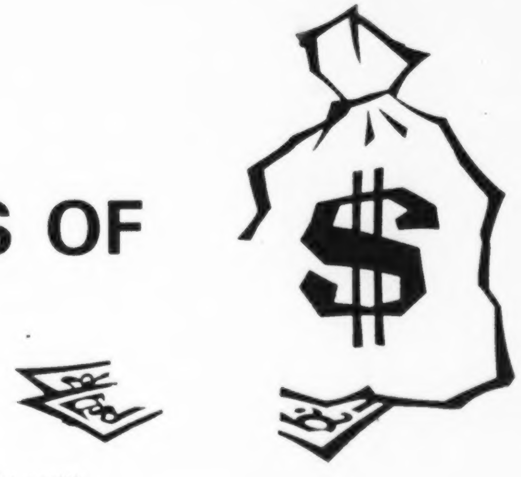
The four types of schools we have profiled represent only a few alternatives among many. Although the private universities we've looked at are in urban settings and the small colleges in rural ones, you can also find a few small colleges that are in the middle of large cities and some universities that are located in fairly small towns.

Among those schools with specialized curricula, technical schools were the only ones we explored here. However, you may also want to consider art schools, music conservatories, or service academies.

Use these profiles to start thinking about the type of school you'd like to attend. Weigh the opinions of the college students we've quoted on what's been positive and negative about their college years. Consider how you might feel about those issues. Then begin planning ahead to make your own college experience as positive as it can possibly be. ■

How Can Anyone Afford ***That?***

THE INS AND OUTS OF FINANCIAL AID



Ellen Frishberg *Director of* Student *Financial* Services

The price of a college education is rising far faster than income or inflation. In the mid-1970s a year at the most expensive colleges cost about $4,000, a figure many families—with some belt tightening—paid out of pocket. Today, when a year at the most expensive colleges costs more than $25,000, few families can manage the same fiscal feat. And the spiral continues upward.

As more and more parents are discovering that they cannot readily afford the schools their children want to attend, more and more families are applying for financial aid. But if the admissions process intimidates students, the financial aid labyrinth alarms entire families.

To make financial aid procedures a little less daunting for readers of *Imagine*, we interviewed **Ellen Frishberg, Director of Student Financial Services for The Johns Hopkins University**. She reviewed aid options and offered some very good advice: As with other aspects of the college decision making process, it's never too early to start thinking about financial aid.

"Parents should begin saving for college as soon as their child is born," warns Frishberg, who has already set up college funds for her own children (one of whom is only four months old). College has become so expensive, she says, that parents can no longer count on paying for it out of their annual income, nor can they rely on the colleges to pay it for them. So parents must plan ahead in new ways.

Even after saving all they can, many families still cannot cover the college bill. Such families may be eligible for *need-based aid*, which since the 1960s has attempted to close the gap between what a college costs and what a family can pay. Need-based aid is funded through several programs by the federal government and is also available directly from educational institutions themselves.

FEDERAL NEED-BASED AID

To ensure equitable results across the country, the federal government uses a standard formula—adjusted every year—to define a family's level of need. After analyzing income and assets to determine what a family can afford to pay, the government subtracts the family's assessment from a particular college's total cost: tuition and fees, room and board, books and supplies, personal expenses, and travel between home and school. The balance remaining may be covered through one or more of the following programs.

Work-Study Programs

Federal funds for work-study programs are made available to every college, based on the number of students it enrolls. So a college's financial aid officer often begins by giving campus jobs to qualifying students. Wages vary; work-study jobs may involve serving food in the cafeteria, clerking in an office, or helping a professor conduct research.

Some fear that holding a job is too much of a burden for college students. But studies have shown, Frishberg points out, that students who work adjust more quickly to college life, are better able to manage their time and money, and are more likely to stay in school. As long as students work no more than fifteen hours a week, she says, their grades should not suffer.

Student Loans

Students who need more money than a

FEDERAL AID APPLICATION FORMS

Eligibility for federal aid is determined by the "Free Application for Federal Student Aid" (FAFSA) form, on which families must report all their income and some of their assets. Many colleges also require additional information through the "Financial Aid Form" (FAF).

Although these forms are available in November and are due at the discretion of each school, Frishberg advises students to fill them out as soon as possible after January 1—and certainly no later than four weeks before the deadline set by each school. Because a family's tax forms will not have arrived by January, fairly accurate income estimates are acceptable.

After completing the FAFSA and the FAF, families send them to a *processing service*, which checks for accuracy and evaluates the information using the federal formula for need. Individual colleges then use the processing service reports to determine whether a student deserves federal aid. Colleges that have also established their own standards of need will also send out supplementary forms.

Forms can be confusing, and Frishberg urges families to contact a college's financial aid officer about anything they don't understand. They should also inform the financial aid office of any special circumstances that the forms do not cover. Students whose parents have lost their jobs, have become seriously ill, or are divorcing, for example, may be eligible for additional money.

Final Advice: Apply early, apply on time, and keep in touch with your financial aid officer throughout your college years.

STUDENTS REVIEW

WASHINGTON UNIVERSITY

College Review Series

This on-going series is intended to aid prospective college students in their search by offering insiders' views of selected colleges and universities, as expressed by current undergraduates or recent graduates who have exceptionally high academic ability. These students share a general bias in judging undergraduate education: they all have high expectations for a college or university's academic standards, its institutional and instructional flexibility, and its respect for nurturance of emerging talent. In the last issue we focused on Stanford University. This time we turn our attention to Washington University in St. Louis.

Note that the number of student reviewers is small. Consider their personal perspectives as only one component while you gather factual information and impressions from such other sources as college catalogs, site visits, talks with officials and students on campus, and the advice of your guidance counselor and teachers.

Washington University

Washington University, referred to by some as "the Harvard of the Midwest," may not have the name recognition of some of the highly selective East Coast universities; but it offers a first-rate education. Highly able students may be especially interested in the excellent merit-based scholarships offered by each of the schools. For example, the School of Engineering offers four Langsdorf Fellowships (full tuition), twenty Woodward Fellowships (half tuition), and a number of smaller scholarships. Local and minority students are also eligible for special scholarships.

Our reviewers include six students who major(ed) in biology (1), chemical engineering (1), chemistry (1), computer science (1), electrical engineering (1), French (1), math (2), physics (1). (The number of majors exceeds six because several students have double majors.) Students' comments appear in italics.

Quality of Academic Instruction for Undergraduates

Undergraduates enroll in one of five schools—Architecture, Arts & Sciences, Business, Engineering, or Fine Arts—and have the opportunity to take classes in any of the schools. Our reviewers spoke favorably about the overall quality of education at Washington and about the accessibility of professors.

"Washington's most appealing aspect, for me, was its overall academic strength. I looked at many universities and found that in nearly every academic area Washington measured up to other schools, even Ivy League and renowned technical schools. In addition, I have found all my professors to be very approachable. I have also found my classes to be suitably challenging and in-depth."

"Overall, Washington has an excellent undergraduate program. To be sure, it has its share of poor instructors, but in general the faculty are of a high quality. I also found them to be accessible when necessary. Aside from of a handful of introductory courses, most classes have 40 or fewer students, which allows in class interaction with the professor. Professors, not graduate students, teach the overwhelming majority of classes."

"Distribution requirements are relatively strict: three classes in the natural sciences, three social sciences, three literature/history, and a choice of three from among the many language, art, and philosophy classes offered. Anyone who doesn't mind taking one or two classes per semester in a distant field to broaden his/her knowledge will find Washington to be an excellent school."

"The Engineering School is separate from the Arts & Sciences School and has different distribution requirements. The distribution requirements for the engineering school focus on classes offered in the Engineering School. It is difficult to double major in an engineering and a non-engineering field because almost none of the core requirements overlap; the few who follow this path end up taking at least 18 credit hours a semester."

"The strength of the math department can be seen in its history of strong finishes in the Putnam Mathematical Competition. These results are due to the excellent math faculty, the number of bright students, and weekly practice sessions (held by two enthusiastic math professors) which are fun as well as helpful."

"Washington has about as many graduate as undergraduate students, and a lot of interesting graduate courses are open to promising undergraduates. All of the graduate-level math courses are open to qualified undergraduates. The finals for these classes are the actual qualifying exams for PhD candidates, thereby providing an excellent experience for anyone planning to pursue graduate education in mathematics."

"I've had several excellent professors and only a few bad ones. It's up to you to seek out research opportunities and to go to office hours, etc. Personal attention doesn't come to you, but it only takes a minimum of effort to get it. I've also received a great deal of personal attention through the Honors Scholars Program."

Social Life

Reviewers mentioned the comfortable size of the student body and the lovely campus, located in a suburban area of St. Louis near a large park.

"The size of Washington appealed to me. With 5,000 undergraduates, it was just right for me. I didn't find myself lost in a sea of students; the number of undergraduates was small enough for me to know a reasonable percentage of my fellow students. Furthermore, there are enough students that Washington can support good facilities (e.g., a large library and well-equipped labs) and offer a large selection of classes. Registering for classes and using facilities have also been easy to do."

"The campus is in an attractive, safe area of St. Louis. Dorms are coed and are all in the same part of the campus, both of which help in meeting people. There are many extracurricular activities. Sports are fun but generate little enthusiasm at the intercollegiate level."

"The social life you have at Washington will depend on the amount of energy you put into it. There are certainly plenty of opportunities on campus, plus you have the advantages of being in St. Louis, with its sports teams, museums, night life, and so on."

"You can meet all kinds of people easily. There are also many clubs, like the 'Go' [a chess-like game that is very popular in Japan and China] club, which would be practically impossible to find in a small college."

"There is a considerable Greek system (about 35-40% of students are involved in fraternities and sororities), but most campus parties are open and free. Guys are pressured to join more than girls."

What Do You Like Best About Washington University?

"I've had a very good education almost for free because of my scholarship. I am getting a great research opportunity in a lab at the medical school. Students are friendly, open, helpful, not stuck-up, not too competitive, and intelligent."

"Washington's location is in many ways ideal. While it is in St. Louis, it is not a typical urban campus. It's nestled between two wealthy suburbs and a large park. It doesn't have the high crime rate that some urban campuses have. Yet students still have all the advantages of living in a city; they can easily reach downtown St. Louis by car or bus."

"I was able to set my own agenda for my academic program within the degree restrictions of my major department. I was able to complete a BS/MS program in four years with the help of AP credits, and I managed to pursue some extracurricular activities as well. I also made many friends."

"A bonus, to me, is Washington's beautiful campus. The majority of the buildings on the main campus were built in the late 1800s in the style of Cambridge University in England. Thus, there are many ivy-covered stone buildings, with arches and courtyards and stone benches. Washington's campus is one of the nicest of the many I have seen."

What Do You Like Least About Washington University?

"Many people haven't heard of Washington University. Since deciding to attend, I have explained many times where it is. That's partly because it is a Division III athletic school, where academics take priority over competitive sports. Among people who are familiar with higher education, however, the school is very well respected. The medical school is famous, a feature that draws many pre-meds."

"The rumor that Washington was rated as having the second largest workload of any school in the country had students half-heartedly joking this year. I'm no expert at other schools, but Washington does have a lot of overworked engineering, pre-med, and architecture students. But I've found the atmosphere friendly and enjoyable."

Who Would Be Most Compatible with the Academic and Social Atmosphere at Washington University?

"I am not sure whether there is an ideal student for Washington. A bright, motivated, and reasonably outgoing person will have no problems. I would highly recommend visiting the campus during the year if you are interested in going there."

WASHINGTON UNIVERSITY

St. Louis, MO 63130 • (800) 638-0700

- 4-year private coed university
- Suburban campus on the outskirts of St. Louis.
- Semester system; Study Abroad programs.
- Full-time undergraduate enrollment 1992-93: 2,511 men; 2,303 women.
- Special features: Merit- and need-based scholarships; campus adjacent to Forest Park, the second largest municipal park in the US, which includes a science center, zoo, art museum, golf course, and skating rink.

"Washington is not a party school. Most students spend their week nights studying, although the weekends do get pretty rowdy. The ideal person is someone who goes out and gets involved in various activities when he/she has the time, but also has enough discipline to know when to stay in and study. There really is a wide mix of students."

"Someone who is hard-working and can manage that stress. The work load is much heavier than at some schools; intelligence is not the only factor in academic success—hard work is equally important."

If You Had It To Do Over Again, Would You Go To Washington University?

All six reviewers said yes. Two emphasized that their scholarships were a big part of their happiness with their choice.

"Sure. I had a great time, met many good friends, and got a BS/MS in four years. I was well-prepared for graduate school, too, and even won an NSF Graduate Fellowship. What more could one ask for from an undergraduate experience?"

"Originally, Washington was not my first choice; in fact, it was low on my list of eleven schools to which I applied and was accepted. However, that was only because I knew little about it. Through my careful college research—visiting, talking with people (deans, professors, students), and reading much college literature—Washington became my first-choice school. While it is not the best choice for everyone, for me it is academic paradise. It is everything I'd hoped for in a college academically and socially. Furthermore, as a recipient of a full-tuition fellowship, I do not have to worry about money while I am pursuing my undergraduate education."

"This is a question I've pondered a lot. I really love Washington, but part of me would like a school with more school spirit. A lot of friends have asked me how I could have chosen Washington over Harvard, which I did. However, I'm happy with my choice and would do it again."

As you try to find the college or university best suited to you, the views of Washington University presented above may be helpful. Keep in mind that these students might have had similar positive or negative experiences had they attended a different university. At any college, it is important for the individual student to seek out challenging academic experiences and the best professors, and to create a social life that best fits his or her personal style. ■

The students quoted in the College Review Series are expressing their own views, which are not necessarily those of JHU or CTY.

WRITING FOR PUBLICATION

Part I:

Learning How To Write

Writing well is both an art and a craft, a creative marriage of imagination and discipline. If you want to write well, and you want to see your work in print, take these measured steps toward your goal.

Read voraciously. To become a good writer, you must first be an active reader. Read everything you can put your hands on—certainly the Great Books, and others that regularly appear on reading lists, both fiction and non-fiction. Read the better newspapers and magazines to stay informed about world events and expand your experience of life.

As you read, listen for each writer's *voice*, the distinctive tone of the piece. What's the point, and how does the writer develop it? Notice the underlying structure: the framework of beginning, middle, and end. Is the writer's style readable? Do the words and sentences flow in a varying rhythm that draws you in and carries you along?

Start your own reference library. Essential tools of the writing trade include an excellent dictionary such as the latest edition from American Heritage, a thesaurus, *Bartlett's Familiar Quotations*, and the pocket-sized *Elements of Style* by Strunk and White.

Natalie Goldberg's *Writing Down the Bones: Freeing the Writer Within* provides helpful hints on journal writing. Claire Kehrwald Cook's *Line by Line: How to Improve Your Own Writing* (published by the Modern Language Association) includes a thorough review of English grammar and punctuation, plus a glossary of often misused words and phrases.

Keep a journal and make writing a daily habit. The discipline of writing, like any other exercise, requires regular practice if you expect to improve. Buy yourself an inexpensive notebook; a steno pad is handy because it's easy to carry and easy to use in crowded cafeterias or on buses. Reserve a time and a place each day to write a page or two in your journal. Take your pad when you leave the house in case inspiration strikes, and leave it by your bed at night to record those flashes of insight that come just before sleep.

Indulge in stream-of-consciousness rambles. Write about your day, your plans for the future, your reactions to people or world events or books you're reading. Try describing a dream you've had—a real challenge because dream imagery is so layered and elusive. Jot down possible themes for short stories, snippets of conversation overheard, new words with their definitions, and *mellifluous* (smooth, sweet, honeyed) phrases. From time to time, you'll refer back to these notebooks for writing ideas.

Don't censor your journal writing; just let your creative self go wild. Remember, you don't have to show this to anyone else. If no specific subject comes to mind, try this trick: just put your penpoint down to the paper, loosen up, and move your hand around until letters form. It sounds silly, but no one's watching you—and it works.

Develop your own writing voice. The more you write, the more clearly you'll hear your own distinctive voice. And the more readily you'll learn to adapt it to different purposes. So experiment with different styles of expression in your journal writing. Then, when you find one that is both effective and comfortable for you, transfer that style to formal writing meant for the eyes of others.

Before you begin a piece, define what you want to say. If you're not clear about your purpose, you may meander your way to the end only to discover that you've arrived at a place you don't recognize. And if *you're* lost, imagine the plight of your poor reader.

English has the largest vocabulary of any language in the world; revel in its richness and put its variety to work for you. This is not an invitation to litter the page with six-syllable words and interminable sentences when shorter ones will do. Overwriting sounds confused, not brilliant. In fact, the most effective writers select language that is most readily understood. Their goal, like yours, is to communicate a point with clarity as well as style.

Vigorously edit your own work. Accept as a given that *no one's* first draft is ever perfect. Professional writers may redraft and revise one piece thirty times—or more. And even then, it runs the gantlet of the publisher's editors before appearing in print. (Be sure to read Steven Shepard's article, which follows, about his experience of the edit-to-publish process.)

To edit effectively, you must harden your heart and slash your way down the page. Identify essentials; eliminate clutter. Unless you have a stylistic reason for using them, avoid the passive voice, *to be* verbs, word repetitions, too many prepositions or relative clauses. Make sure that each word, especially each verb, pulls its full weight.

Once you've written the third (or so) draft, put it away for a few days, then review it with fresh eyes. Read it aloud, and listen to the cadence of syllables, words, and sentences. Is the rhythm too repetitive? Too choppy? Remember that most of us silently *hear* the words on the page; revise until the sound pattern pleases your ear.

Form a peer review group. Start one with other students at school or with friends outside who share your interest in writing. Set ground rules for constructive criticism, then take turns reading aloud and discussing your work.

You won't enjoy hearing your priceless prose dissected, but if you really listen to an appropriate review, you will become a better writer. You'll learn to choose just the right word and eliminate excess verbiage, to pare down and tighten up.

The fantasy that a *real* writer can toss off a prize winner during a sunlit afternoon on the beach is just that—a fantasy. Writing well is hard work, but you'll appreciate the results. ■

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HOW I LEARNED TO WRITE, EDIT, RE-EDIT . . . AND SURVIVED

by Steven Shepard

On October 6, 1992, at 5:32 pm, I received a phone call informing me that my book, *Fogbound*, had won the National Written and Illustrated By . . . Awards Contest for Students. I was ecstatic. I couldn't believe this was happening to me. This was the glorious culmination of months of anxious waiting for the judges' decision. Floating on a cloud of exultation, I was very aware that, after my all-expenses-paid trip to Kansas City to meet with my editors, *Fogbound* would soon become a published book, and I would receive royalties in addition to a $5,000 scholarship.

What I didn't realize was what those Kansas City editors had in mind for me during the next few months. I'd thought, rather naively, that I had already done everything and that all Landmark Editions planned to do was slap me on the back and make lots of copies of my book. Actually, *Fogbound* had just started down the road to publication. Landmark Editions wanted a complete rewrite, including a revamped plot, a new villain, and even a new theme. Not only that, my drawing skills needed to be improved by lengthy practice. Landmark Editions had produced over twenty-five stunning books thus far, and *Fogbound* had to measure up to their standard.

Gulp. It was mid-November when I returned from Kansas City, and I knew even then that I had nearly half a year's work in front of me. I rewrote *Fogbound* from the bottom up, rarely glancing at my original contest entry. I watched as a light, mild story starring a boy trying to row back from a picnic through thick fog became an action-packed thriller about a boy who, attempting to return his father's stolen knife, was chased into thick fog by a sinister lobsterman and forced to battle the elements in a race to return home before his father discovered the blade missing. I felt a tinge of regret at some of the changes. *Fogbound* was no longer the relaxed story I had liked so much; it was evolving into something new.

The first rewritten version wasn't nearly good enough, of course—first drafts never are. It was much rougher than my original story. So work continued at a steady pace, five drafts written in the following three months. This taught me an important writer's credo: *It's never right.* I'd revised my contest entry, of course, but not as I had to revise the new version. The editors forced me to scrutinize every paragraph, asking myself hard questions. Did it waste any words? Did it contain any awkward phrasing? Were there any sentences too difficult for a young child? Was the paragraph, in fact, necessary to the story at all? This was the first time anyone had pored over my work so thoroughly, and I resented some of my publishers' inquiries into what I felt were the best parts of *Fogbound*.

In fact, Landmark Editions and I frequently disagreed; rare is an author-editor team that does not. Our fiercest battle waged around whether or not my main character, Jason, should reveal his illicit adventures to his parents. He'd sinned plenty—gone rowing without permission, taken his sister with him, lost his compass, and worst of all, stolen his father's precious knife and *forgotten* it on an island. Yet with luck and skill, he had seen through it all, covered his tracks, and escaped detection. At least, that's how I wrote it. Landmark Editions, mindful that it was publishing a book for impressionable young minds, reasoned that Jason, being a good kid, should confess his crimes to his parents. Though I disagreed, maintaining that Jason would never do such a thing, my publishers were adamant. Finally I swallowed my pride and my arguments and changed the ending. They were the publishers, after all.

Landmark Editions didn't dictate everything, though. *Fogbound*, now finished and recently published, is still my story. In fact, it's a better, smoother, more suspenseful book than the one I had written by myself. Most of my concepts remain, and the ones that were edited out have been replaced by better ideas. Everyone involved is pleased with the final product.

I learned a lot from my editors, albeit the hard way, about suspense and successful plot techniques. Before Landmark Editions pointed it out, I'd never realized just how slow my beginning was and what a turnoff this would be to critical elementary school readers. Sending Jason rowing out on a mission to right his misdeed before his parents discovered it, instead of rowing out to enjoy a rather dull picnic, was a great idea. And thanks to Landmark Editions, my artistic skills have improved immensely.

Someone once asked me, "If you had known beforehand about all the months of hard work and the drastic changes that would be made to your story, would you have entered the contest anyway?"

"Definitely," I replied without hesitation. But it was not the scholarship, royalties, or recognition I have gained that made me answer that way. It was something else, something I think every writer will understand. I'd do it all over again just for the satisfaction of having written and illustrated a book.

I hope all the authors, published or not, who read this will take the time to show the world what they can accomplish. There are books in local libraries full of contests and magazines eager to read students' material. But it's up to each individual student to find the time and courage necessary to send stories out to publishers. Take it from me, though—it's worth it. ■

*For the past eleven years, **Steven Shepard** and his family have spent their summers in a secluded area of the Maine coastline, which provided the setting for* Fogbound. *Attending ninth grade in Virginia, Steven also participates in essay, history, science, and piano competitions.*

To order *Fogbound* or any other Landmark Editions publication, call (800) 653-BOOK.

CREATIVE MINDS *Imagine...*

Submit your creative work—poems, brain teasers, short stories/essays/book reviews. We look forward to hearing from you. Please write to Imagine • SET at CTY • The Johns Hopkins University • Baltimore, MD 21218-9985

BOOK REVIEW *by Shruti Ravikumar*

Twelve-year-old **Shruti Ravikumar** attends 8th grade at The Lawrenceville School in New Jersey. While living in Connecticut last year, she won a gold medal in the COLT Foreign Language Poetry Recitation Contest and was one of three contestants representing her state in the Scripps-Howard Spelling Bee Nationals.

Edith Wharton's *Age of Innocence* takes place in New York City in the 1870s, during an era of gaslit streets and private broughams, an era when scandal was the greatest form of pestilence, and 'taste' and 'form' were presiding idols. It was a time when high society was paramount and acquaintances with opera houses were intimate, an era in which balls were grandiloquent statements to which only the influential were invited. It was an age when the rules of society were rigid, and the citizens of consequence resided behind formidable brownstone facades, under an air of naiveté. In short, it was an age of innocence—assumed innocence.

In this setting Newland Archer is blissfully anticipating his marriage to the gentle and 'suitable' May Welland, when the bohemian Madame Ellen Olenska unexpectedly returns from Europe and changes everything. Archer believes himself to be free from the influence of society. However, his acquaintance with Mme. Olenska, an American married to a European count, shows him that he is indeed tied by the bonds of society. Mme. Olenska, because of her foreign manners and responses (which Archer finds refreshing), is a model of non-conformity. Having returned to New York to run away from her husband, she asks Archer to "explain things" to her. He responds, "It's you who are telling me: opening my eyes to things I'd looked at so long that I'd ceased to see them."

Archer soon falls in love with Mme. Olenska and must finally choose between his heart's desires and his concern for propriety, between his wishes and his obligations. Mme. Olenska acknowledges the presence of the tightly knit rules of society about her and realizes the unsuitability of their match. She therefore does not let Archer get as close to her as he desires. Archer's wife, May, suspects that Archer loves Mme. Olenska, but her thoughts are concealed behind that veil of innocence that envelops the entire society. The complexity of the relationship between Archer and the vibrant Mme. Olenska develops throughout the book, as they live within the small world of New York's social élite, yet are held apart and finally divided by the wall of morality and society's expectations.

One of my favorite scenes is the description of Archer's innermost feelings as he realizes that it is his own unwillingness to defy social convention that has made their match impossible: "He had built within himself a kind of sanctuary in which [Ellen] throned among his secret thoughts and longings. . . . Outside it, in the scene of his actual life, he moved with a growing sense of unreality and insufficiency, blundering against familiar prejudices and traditional points of view as an absent-minded man goes on bumping into the furniture of his own room." The poignancy of this beautiful passage reveals the author's wonderful insight into human nature.

In its portrayal of a different era, *The Age of Innocence* illustrates the profound influence of society upon its inhabitants and demonstrates how the intricate bonds of society could entangle and ensnare any unsuspecting person. It portrays the complexity of human nature and the importance of rank and relations in that age of innocence—an age when everyone "knew more about each other's private thoughts than we ever have time to find out about our own."

This Pulitzer Prize-winning classic is elegant, vibrant, and eloquent. The intimate access Wharton gives her readers to the innermost thoughts and feelings of her characters, along with her vivid descriptions, brings the book to life. This striking portrayal of love betrayed is a masterpiece, and I recommend it highly.

ANOTHER PUZZLE

by Tim Boester

Fascinated by mazes and puzzles, **Tim Boester** is also intrigued by roller coaster design. Tim has just turned seventeen and plans to study physics and math when he enters college next fall.

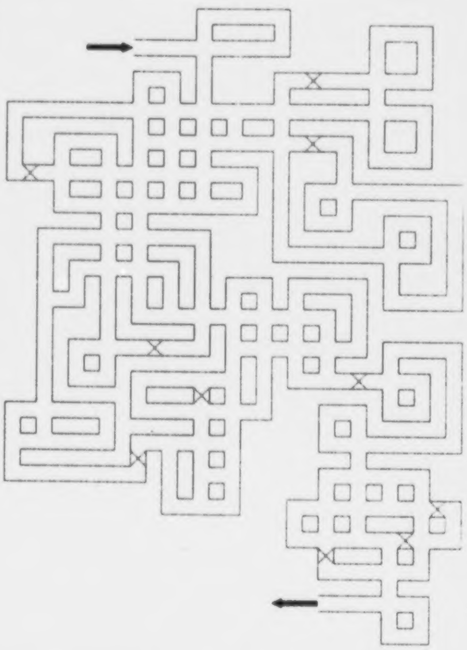
DIRECTIONS:

1. You must go through all the Xs.

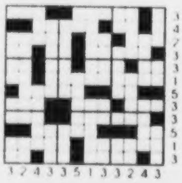
2. When you reach an intersection, you may go straight through or make a turn to the right or left. However, once you turn, you can turn only in that direction until you pass through an X. (So you have to plan ahead, don't put yourself into a left-turn-only corner if you are in a right-turn-only mode.)

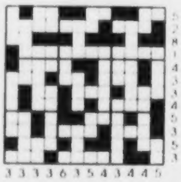
3. Switch the direction you are turning every time you pass through an X.

4. You may cross your path, but may not repeat or backtrack.



Answers to Puzzles in Sept./Oct. issue of *Imagine*:





VOLUME 1 • NUMBER 3

ImaGiNe...

Opportunities and Resources for Academically Talented Youth

Spotlight On

CHOOSING ACADEMIC SUMMER PROGRAMS

January/February 1994

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When summer vacation arrives, talented students who are eager to keep learning can fill their days with experiences of all kinds that enhance knowledge.

Summer is the perfect time to take advantage of enrichment opportunities that aren't available— or that you don't have time for—during the school year. You may enjoy poring over a stack of recommended reading. Or learning a new computer language. Or researching local history while you travel with your family.

Another option is to attend an excellent academic summer program that's located on a college campus and balances accelerated coursework with recreation. If this idea appeals to you, your biggest problem may be narrowing down your choices. The many courses briefly described in this issue by no means exhaust your options, as you'll discover if you glance through any of the books recommended on page 13.

One benefit of programs like these is the friendships you'll make. Because those who attend share common interests and a love of learning, students who may feel somewhat out of place during the school year often find a genuine peer group here. Many form close friendships that continue by mail, phone, and e-mail during the school year.

Now that winter winds are blowing, summer may seem far off. But some deadlines are already looming, and programs for talented students are very popular. Classes fill quickly; many accept qualified students on a first-come, first-served basis. So, if you want to apply, don't delay. Make your selection early, and beat the rush. ■

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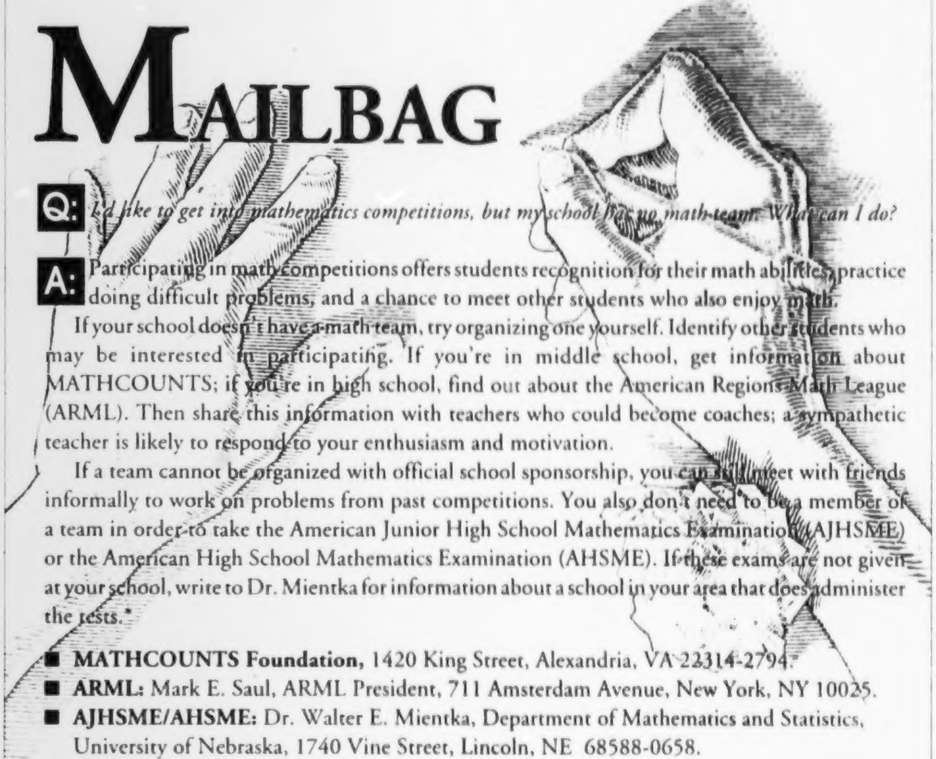
MAILBAG



Q: *I'd like to get into mathematics competitions, but my school has no math team. What can I do?*

A: Participating in math competitions offers students recognition for their math abilities, practice doing difficult problems, and a chance to meet other students who also enjoy math.

If your school doesn't have a math team, try organizing one yourself. Identify other students who may be interested in participating. If you're in middle school, get information about MATHCOUNTS; if you're in high school, find out about the American Regions Math League (ARML). Then share this information with teachers who could become coaches; a sympathetic teacher is likely to respond to your enthusiasm and motivation.

If a team cannot be organized with official school sponsorship, you can still meet with friends informally to work on problems from past competitions. You also don't need to be a member of a team in order to take the American Junior High School Mathematics Examination (AJHSME) or the American High School Mathematics Examination (AHSME). If these exams are not given at your school, write to Dr. Mientka for information about a school in your area that does administer the tests.*

- **MATHCOUNTS Foundation,** 1420 King Street, Alexandria, VA 22314-2794.
- **ARML:** Mark E. Saul, ARML President, 711 Amsterdam Avenue, New York, NY 10025.
- **AJHSME/AHSME:** Dr. Walter E. Mientka, Department of Mathematics and Statistics, University of Nebraska, 1740 Vine Street, Lincoln, NE 68588-0658.

Q: *I am a 10th grade student looking ahead to college. I scored at a high level on the SATs in 7th grade, get excellent grades, and want to attend a highly selective university. But there are no activities in my school that interest me; I prefer to spend my free time reading or doing science projects at home. How important are extracurricular activities for getting into college?*

A: Selective colleges do consider activities as one element when weighing applications. Although no one should participate in activities *just* to impress colleges, extracurricular activities are an indication of a student's commitment to a particular area of interest. And colleges are looking for students who are bright *and* who will contribute to campus life by being involved outside class.

Search for activities that build on your own interests. For example, since you like doing science projects, you could:

- Join or start a science club in your school.
- Participate in science fairs. Find out about fairs at the local and state levels; plan to submit a project to the national Westinghouse Science Talent Search (STS) during your senior year.*
- Participate in academic summer programs where you can take a science course that is not available in your school or where you can do an internship in a scientific laboratory.
- Find a scientist who will serve as your mentor. This person will be invaluable if you work on a project for the Westinghouse STS. A mentorship will also give you a chance to experience science in the real world.
- Join your school newspaper staff, and offer to write about scientific topics.
- Become a tutor/mentor yourself; work with elementary-aged and/or disadvantaged students to help them with science.
- Volunteer at a science museum.
- Look for other science-related community activities in which you could become involved, such as helping to clean up the environment.

Devising activities that suit your own needs requires time, energy, and enthusiasm. But colleges like to see such initiative, and you will benefit from activities that are truly interesting and challenging to you. ■

**See the September/October issue of* Imagine *for other math and science competitions.*

STUDENTS & PARENTS: Do you have a question about educational placement, subject/grade acceleration, or other concerns relevant to academically talented students? If so, please write to *Imagine*, SET at CTY, The Johns Hopkins University, Baltimore, MD 21218. Some questions may be answered in the Mailbag column; others may become the subject of an article.

PHOTOS APPEARING IN THIS issue on pages 5, 11, and 12 were provided by Dave Hoffer, CTY Graphics and Publications.

Due to an editorial oversight, the November/December issue omitted credits for Richard Anderson and J. Pat Carter whose photos appeared on pages 7 and 8.

Imagine...
Opportunities and Resources for Academically Talented Youth

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Student's Perspective on Academic Summer Programs: *Accelerated Learning, Self-Discovery, & Mandatory Fun*

Talented students often find that academic summer programs fill a special need in their lives, both intellectually and socially—as this summer program veteran describes.

by Kimberly Knowles

Summer programs, or "nerd camps" as they are sometimes called, are not just boring summer schools where everyone loves doing homework until their pencil sharpeners overflow. They are a chance to go somewhere and live parent-free for an extended period of time, to learn something for the sake of learning, and to meet people like you who are motivated to learn.

My first summer program was run by the Center for Talented Youth (CTY). I attended the CTY-Skidmore College site and took Writing Skills. I made close friends, as my roommate, Carrie, and I—and the girls who shared our bathroom, Liz and Christina—learned the value of a home-cooked meal while we explored the culinary delights served at the dining hall. In my class, I learned to give and receive constructive criticism, as well as how to write a three- to five-page essay every night. Because we read the essays written by everyone else in the class, we got to know each other pretty well.

On weekends, the girls in my RA group (that's a group of twelve to fifteen girls or guys with the same counselor or Resident Advisor) would camp out all day in the laundry room, sending envoys to sneak food out of the cafeteria, playing cards, and comforting the occasional homesickness victim.

CTY was the best three weeks of my life up to that point. Since then, I've been back to Skidmore two summers, to Bennington College once, and to the Research Science Institute at MIT (RSI). It is surprising to discover how many summer programs are out there when you really look.

Multiple Benefits

The benefits of a summer program are readily apparent. First, you get to experience life without parents; you are on your own and responsible for your own laundry, meals, and homework. Depending on the program, the academic requirements vary from mandatory study time to no structure at all.

Also, you get to discover your true self. Sometimes kids are thrown into the nerd mold at their schools and never find themselves until they get away. At CTY, I realized that no one there knew anything about me and that everything I did would affect their impressions of me.

In terms of concrete benefits, you generally learn a lot, and sometimes you can receive high school or college credit or advanced placement, depending on the program. I was able to do exceptionally well in math and skip chemistry altogether after CTY, and I moved up into an advanced French class after Bennington.

Finally, being on campus gives you an extra window into college life, which may help when you go college-shopping later.

How To Choose

Okay, you've decided you want to go away. There are many factors to consider in choosing a summer program.

When I chose Bennington, I was 16 and thought I'd outgrown CTY where the age range is 12 to 16. Many of my friends were not returning to CTY, either. I went into the guidance office and flipped through all the brochures. I wasn't ready to go to a foreign country for the entire summer. This time I just wanted to study something interesting, with no exams at the end. I didn't want to be in a city. And I was ready for a little more freedom than being confined to a campus, study hours, and a curfew of 10 pm.

One thing that I considered heavily were extra leisure activities. CTY had "mandatory fun" twice every afternoon. These were obligatory sessions of volleyball, frisbee, creative writing, and other relaxing activities to ensure that we wouldn't huddle in our rooms and ignore the world. In most summer programs for older students, free time is often curbed only by a curfew, if that. This didn't seem to be a good idea for me, because I have a tendency to be shy. However, Bennington offered electives for organized social activities and also offered the same freedom as some other programs, including shuttles to town and a midnight curfew.

Another factor in choosing a program is the students. Are high standardized test scores required? At Bennington, they were not; thus many students there were not necessarily the best academically, but were talented in other areas and highly self-motivated. In addition, many smoked. Class offerings at Bennington included The Sixties, drama, law, and journalism. However, admission to RSI is highly competitive. I knew that everyone there would be math and science oriented, and I considered that fact in deciding to attend after my junior year.

So, think about what you want to be doing. Taking classes, producing a play, and doing scientific research are all options. Another question to consider is, how is the program structured? If you are a person who procrastinates, do you want mandatory study hall hours, or do you want none so that you can learn to prioritize (before you get to college where it counts)?

Length of time is another factor to consider. I knew that I wanted something longer than three weeks when I chose Bennington. Homesickness might drag you down, so if this is your first time away, you might want to stick to a one- or two-week program. Shorter programs often let you plan around family vacations during the summer.

Cost Considerations

Cost is another issue that may limit your choices. CTY and Bennington were expensive, considering I could have stayed at home and gotten a job. However, almost all programs offer some need-based financial aid. Sometimes local clubs offer grants; I received a small scholarship from my school's Music Association to study music at Bennington. A few science research programs offer a stipend for your work; and a few programs are free except for transportation, such as RSI, Telluride, and Governors' Schools.

Another way to cut costs is to commute. While living on campus is fun, many programs allow you to commute if you live nearby—which gives you the learning experience and the people, if not the laundry. If the program has a commuter option, it's generally cheaper than being in residence.

Summing Up

All in all, summer programs are generally worthwhile. You get to meet new and interesting people, make lifetime friendships, and learn without the pressure of grades.

CTY allowed me to accelerate through high school. At Bennington I learned how to keep the peace between friends and roommates and how to play pool. At RSI, I ate Pop-Tarts raw and got to talk about high-level math and science principles while experiencing MIT, where I decided to apply for college. I also discovered the value of a good night's sleep.

Summer programs are what you make of them, and they can be the best times of your precollege life. ■

Kimberly Knowles did apply to MIT, as she had planned, and is now a freshman there. She reports that she is enjoying lectures by scientists of world renown, appreciates MIT's "pass/no record" policy for freshmen, participated in seven musical groups during the fall semester, and somehow still manages to sleep seven hours a night.

A version of this essay appeared last year in *The Prufrock Journal*, now known as *The Journal of Secondary Gifted Education*. Reprinted with the author's permission.

Talent Search Programs

These summer programs are either conducted by universities that sponsor annual talent searches or modeled after such talent search programs. Eligibility is based on scores on the SAT or another aptitude measure.

Talent Search programs take place in supervised campus settings and offer academic challenge, acceleration, and enrichment. Classes typically meet five or six hours a day, with an evening study hall. Fast-paced coursework, small class sizes, and low student-to-faculty ratios enhance the joy of learning. And social, cultural, and recreational events provide breaks in the academic schedule. Upon completing many of these programs, students receive transcripts and teacher recommendations. Some middle and high schools may be willing to accept these credentials for course credit or advancement to a higher course level.

Qualified students may apply to any of these programs on a space-available basis; however, centers typically give priority to their own talent search participants.

ATS:
The Academic Talent Search and Accelerated College Entrance Center

California State University, Sacramento, California

The ATS Summer Program uses the SAT or SCAT to identify students completing grades 6 through 9 who have exceptional academic potential. Options for the three-week or six-week courses on campus include fast-paced mathematics (algebra through precalculus), writing, journalism, drama, public speaking, debate, foreign languages, biology, forensic science, computer science, engineering, problem solving, and study skills.

This is a commuter program, but some host families house participants from outside the Sacramento area, and carpooling lists are available.

Dates for the 1994 ATS Summer Program are **June 27-August 5.** Fees range from $120 to $250 per course; financial aid/scholarships are available. The application deadline is **May 2.**

Dr. Terry Thomas, Director, ATS, CSU-Sacramento, 6000 J Street, Sacramento, CA 95819-6098; (916) 278-7032; FAX (916) 278-5930.

CAP:
Center for Academic Precocity

Arizona State University, Tempe, Arizona

The CAP program in the College of Education offers classes on the Arizona State University campus in Tempe and the ASU Thunderbird campus. Entrance into the commuter program and the five-week residential program is based on SAT scores for grades 7-11 and on SCAT scores for grades 2-6. Entrance into the three-week residential program is based on scores from a standardized achievement, ability, or intelligence test.

A five-week **Commuter Program** is offered for **pre-kindergarten through grade 11** students on the ASU Tempe campus and for those completing **grades 2 through 11** on the ASU Thunderbird campus. Also available on the Tempe campus are a five-week **Residential Program** for students completing **grades 7 through 11** and a three-week residential program for those completing **grades 5 and 6.** Workshops are available to students completing **grades 7 through 11.** Students may take courses in the humanities, mathematics, science, and computers.

Dates for the 1994 CAP three-week residential program are **July 2-July 23;** for the five-week commuter program, **July 5-August 5;** and for the five-week residential program, **July 2-August 6.** Fees for the residential programs are $1,275 for three weeks and $2,025 for five weeks; for the commuter program, $325 per course. The application deadline is **April 30;** applications will be accepted beyond that date as space permits.

Dr. Eleanor Jordan, Director, CAP, College of Education, Arizona State University, Tempe, AZ 85287-2711; (602) 965-4757; FAX (602) 965-1069.

CTD:
Center for Talent Development

Northwestern University, Evanston, Illinois

CTD's Apogee program is listed under Young Students.

CTD offers a variety of programs to develop the academic potential of students with qualifying SAT or ACT scores.

The three-week **Spectrum** Summer Program, with residential and commuter options, is open to those completing **grades 7 through 9**. Students select one fast-paced high school course in precalculus mathematics, biology, chemistry, Latin, literary analysis, non-fiction writing, creative writing, or computer science. Dates for Spectrum '94 are **June 26-July 16** and **July 24-August 13**. Fees are $1,490 (residential) and $745 (commuters).

Three CTD programs are open to students completing **grades 10, 11, and 12:**

The **Equinox** Program offers advanced high school courses in mathematics problem solving, science, AP English Literature, AP Language and Composition, and AP European History. Dates for Equinox 1994 are **June 26-July 16**. Fees are $1,550 (residential) and $800 (commuter).

The **Solstice** Program offers college-level courses in mathematics, science, and the humanities. Dates for Solstice 1994 are **July 24-August 13.** Fees are $1,590 (residential) and $825 (commuter).

The **Academy** Program brings together a small group of students with an experienced teacher and teaching assistant for three weeks of exploration and discussion of philosophical questions and problems that arise out of everyday experience. Presentations by university professors in Chicago-area philosophy and literature departments supplement the curriculum. Dates for the 1994 Academy Program are **July 24-August 13.** Fees are $1,590 (residential) and $825 (commuter).

Need-based financial aid is available for all programs. The application deadline is **May 31.**

Dr. Barry Grant, Director, CTD, Northwestern University, 617 Dartmouth Place, Evanston, IL 60208; (708) 491-3782; FAX (708) 467-4CTD.

CTY: Center for Talented Youth

The Johns Hopkins University
Baltimore, Maryland

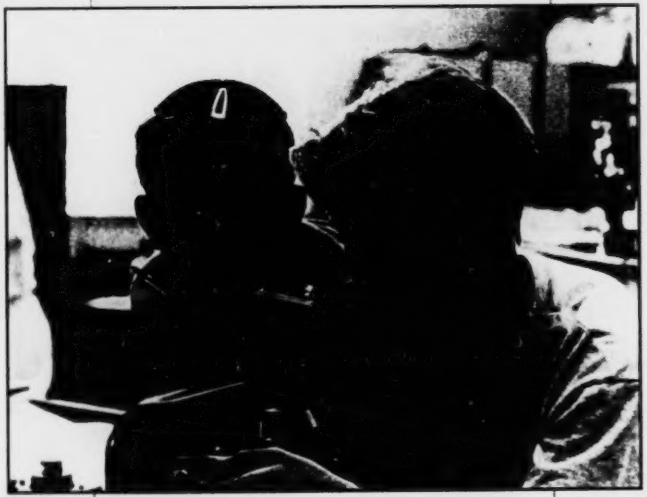
Other CTY programs are listed under Young Students, Science, and Study Abroad.

CTY provides Summer Residential Programs at host colleges for students aged 12 through 16 with qualifying SAT scores. The '94 summer sites are Franklin & Marshall College, Lancaster, Pennsylvania; Dickinson College, Carlisle, Pennsylvania; Hamilton College, Clinton, New York; Skidmore College, Saratoga Springs, New York; Loyola Marymount University, Los Angeles, California; and The Johns Hopkins University, Baltimore, Maryland.

Options include intensive high school courses in precalculus, biology, chemistry, and American and European history, as well as college-level courses in writing, music theory, geopolitics, computer science, and genetics.

Dates for the 1994 CTY sessions are **June 26-July 15** and **July 17-August 6.** Fees for each session are $1,680 (residential) and $765 (commuter); need-based scholarships are available. The application deadline is **April 8.**

Academic Summer Programs, CTY, The Johns Hopkins University, Baltimore, MD 21218; (410) 516-0337; FAX (410) 516-0804.



CY-TAG: Challenges for Youth—Talented and Gifted

Iowa State University, Ames, Iowa

The Iowa Scholars Academy at ISU is listed under College Credit.

CY-TAG, co-sponsored by SMPY at ISU, offers individualized, intensive, and accelerated studies for academically talented students **aged 11-16** who have qualifying SAT or ACT scores.

Courses offered in 1994 include precalculus mathematics, physics, chemistry, engineering, logical thinking, Latin, computer science, and mentorship opportunities.

Dates for the 1994 CY-TAG sessions are **June 18-July 9** and **July 16-August 6**. The fee for one three-week session is $975; financial aid is available. The application deadline is **April 15.**

Teresa Argo, Program Coordinator, CY-TAG, Iowa State University, W172 Lagomarcino Hall, Ames, IA 50011-3810; (515) 294-1772; FAX (515) 294-6424.

Duke TIP: Duke University Talent Identification Program

Durham, North Carolina

Other Duke TIP programs are listed under Science and Study Abroad.

The TIP Summer Residential Program offers fast-paced courses for academically talented students completing **grades 7-10.** Admission is based on qualifying SAT or ACT scores. Courses are taught on the campuses of Duke University and Davidson College, at the Duke University Marine Lab, and at the Texas A&M Marine Lab.

Options for study include animal behavior, astronomy, biology, chemistry, Chinese I, economics, French I, German I, Latin I, precalculus mathematics, the Roman World, introductory writing, computer science, psychology, American history, discrete mathematics, number theory, philosophy, physics, Russian, marine ecology, logic, film and video, and Shakespeare and performance. College credit is available for some courses.

Dates include various three-week terms between June 18 and August 15. Fees begin at $1,800; financial aid is available. The application deadline is **May 2.**

Kayla Hamilton, Admissions Officer, Duke TIP, Box 90747, Durham, NC 27708-0747; (919) 684-3847; FAX (919) 681-7921.

Rocky Mountain Talent Search Summer Institute

University of Denver, Colorado

The Rocky Mountain Talent Search offers two sessions during its 1994 Summer Institute: a two-week commuter session for students aged 10-16, and a three-week session, with residential and commuter options, for students aged 12-16. Students qualify based on SAT or ACT results.

Participants may select from a variety of courses for intensive summer study in a supervised campus setting. Classes are held during the week, with special social, cultural, and recreational events planned for the weekends. Tentative course offerings include algebra, biology, calculus, chemistry, creative writing, geometry, history/current events, Latin, literature, physics, psychology, and theater.

The two-week Session I for commuting students will be held **June 10-24**. The three-week Session II, both commuter and residential, **will be** held **July 10-30.** The cost for the Session I commuter program is $250 (one class), $500 (two classes); Session II costs are $1,495 for residents and $375 (one class) or $750 (two classes) for commuters. Limited financial aid/scholarships are available. The application deadline is **May 21.**

Rich Radcliffe, Director, Rocky Mountain Talent Search, University of Denver, Wesley Hall-Room 203, 2135 East Wesley Avenue, Denver, CO 80208; (303) 871-2983; FAX (303) 871-3422.

WCATY: Wisconsin Center for Academically Talented Youth

Madison, Wisconsin

Other WCATY programs are listed under Young Students and College Credit.

WCATY sponsors the Summer Program at the University of Wisconsin-Eau Claire for students completing **grades 7-10** who have qualifying SAT or ACT scores. Students may choose to study literary analysis and writing, etymologies, cultural geography, introduction to anthropology, precalculus mathematics, geometry, microeconomics, history of number theory, or supercomputer applications.

Dates of the 1994 Summer Program are **July 10-July 30.** Fees are $1,270 for Wisconsin residents and $1,490 for out-of-state residents. Need- and merit-based aid is available to Wisconsin residents. One letter of recommendation from a teacher must accompany the application; the deadline is **May 1.**

Julie Giese, Administrative Assistant, WCATY, Suite 120, 8017 Excelsior Drive, Madison, WI 53717; (608) 831-6144; FAX (608) 836-3893.

Western Kentucky University Summer Program for Verbally and Mathematically Precocious Youth

Bowling Green, Kentucky

This residential three-week program is open to students completing **grades 7, 8, 9, and 10** who qualify on the basis of SAT or ACT scores. Participants choose one fast-paced course in biology, chemistry, computer science, drama through the centuries, expository writing, German I, humanities, Nazi Germany and the Holocaust, physics, or precalculus mathematics.

Dates for the 1994 Summer Program are **July 4-23.** The fee is $1,100. Need-based financial aid is available to Kentucky residents. A deposit of $100 is due with the application; call for the deadline.

Julia Roberts, The Center for Gifted Studies, Western Kentucky University, Big Red Way, Bowling Green, Kentucky 42101-3576; (502) 745-6323; FAX (502) 745-6470. ■

Young Students Programs

Additional options for young students offered by CAP, CY-TAG, and Rocky Mountain Talent Search are listed under Talent Search Programs.

These Young Students programs were developed when university talent searches serving students in grades 7 and up expanded to include those in grades 5 and 6. Participants are well supervised at all times.

CTD Apogee

Center for Talent Development
Northwestern University, Evanston, Illinois

CTD's three-week Apogee Program is open to students completing **grades 5 and 6** who have qualifying PLUS scores. Students select one course from among offerings in mathematics, science, and the humanities.

Dates for CTD Apogee 1994 are **June 26-July 16** and **July 24-August 13.** Fees are $1,490 (residential) and $745 (commuter). Need-based financial aid is available. The application deadline is **May 31.**

Dr. Barry Grant, Director, CTD, Northwestern University, 617 Dartmouth, Evanston, IL 60208; (708) 491-3782; FAX (708) 467-4CTD.

CTY Young Students

Center for Talented Youth
The Johns Hopkins University,
Baltimore, Maryland

The CTY Young Students Summer Residential Program is designed for highly able students who are completing **grades 5 and 6** and have earned qualifying scores on the PLUS test. Three-week courses in mathematics, science, and the humanities will be held on the campuses of Goucher College in Baltimore, Maryland; Connecticut College in New London, Connecticut; and Loyola Marymount University in Los Angeles, California.

Dates for the 1994 CTY Young Students Summer Program are **June 26-July 15** and **July 17-August 6.** Fees for one session are $1,680 for residents and $765 for commuters. Some need-based scholarships are available. The Young Students application deadline is **April 15.**

Young Students Summer Program, CTY, The Johns Hopkins University, Baltimore, MD 21218; (410) 516-0337; FAX (410) 516-0804.

WCATY Young Students

Wisconsin Center for Academically Talented Youth, Madison, Wisconsin

WCATY sponsors a Young Students Summer Program for students completing **grades 5 and 6** who have qualifying scores on the PLUS test or SSAT as MTSY participants, or on the SAT or ACT. This one-week intensive accelerated/enrichment program takes place on the campus of Beloit College in Beloit, Wisconsin.

Dates for the 1994 WCATY Young Students Summer Program are **July 31-August 6.** Fees are $475 for Wisconsin residents and $525 for non-residents. Two recommendations from teachers and a student essay must accompany the application; the deadline is **May 1.**

Deborah Katz Hunt, Program Director, WCATY, Suite 120, 8017 Excelsior Drive, Madison, WI 53717; (608) 831-6144; FAX (608) 836-3893. ■

Math Programs

HCSSIM: Hampshire College Summer Studies in Mathematics

Amherst, Massachusetts

The six-week HCSSIM program offers small classes and problem seminars to students completing **grade 10 or 11** who are ready to engage actively in the processes of mathematical thought. Applicants must write a letter about why they want to attend and must be recommended by a high school mathematics teacher, who then administers HCSSIM's "Interesting Test" which is designed to measure how students handle new ideas.

HCSSIM participants investigate concrete problems, seek patterns and generalizations, formulate and test conjectures, and create proofs. Challenging problems, significant and active branches of mathematics—including number theory, combinatorics, topology, chaos, artificial intelligence, and probability—and substantial applications from outside the usual secondary school curricula are intensively investigated. Emphasis is on methods of discovery and proof.

Students receive personal mathematical guidance on a daily basis. Visiting mathematicians and professional users of the subject, films, computer labs, a program journal, and an extensive library contribute to an environment in which mathematics is created, shared, and enjoyed.

Dates for HCSSIM 1994 are **July 3-August 13**. The fee is $1,224. HCSSIM is a National Science Foundation Young Scholars Program; generous financial aid is available. Admissions are made on a rolling basis, as applications are received.

Professor David C. Kelly, Box NS, Hampshire College, Amherst, MA 01002-5001; (413) 582-5375; FAX (413) 549-0707.

PROMYS: Program in Mathematics for Young Scientists

Boston University, Boston, Massachusetts

PROMYS offers a residential environment in which ambitious high school students completing **grades 9, 10, and 11** explore the creative world of mathematics. Admissions are based on the following criteria: applicants' solutions to a set of challenging problems included with the application packet, teacher recommendations, high school transcripts, and student essays explaining their interest in the program.

Through their intensive efforts to solve unusually challenging problems in number theory, sixty students practice the art of mathematical discovery—numerical exploration, formulation and critique of conjectures, and techniques of proof and generalization. More experienced participants may also study abstract algebra, algebraic number theory, and dynamical systems. Problem sets are accompanied by daily lectures given by research mathematicians with extensive experience in Professor Arnold Ross's longstanding summer mathematics program at Ohio State University.

A highly competent staff of 18 college-age counselors live in the dormitories and are always available to discuss mathematics with students. Each participant belongs to a problem-solving group that meets with a professional mathematician three times a week. Special lectures by outside speakers offer a broad view of mathematics and its role in the sciences.

Dates for PROMYS 1994 are **July 3-August 13**. The fee is $1,246; books may cost an additional $100. PROMYS is dedicated to the principle that no student will be unable to attend because of financial need. Applications will be accepted **March 1 to June 1, 1994.**

Professor Glenn Stevens, Director, PROMYS, Department of Mathematics, Boston University, 111 Cummington Street, Boston, MA 02215; (617) 353-2563.

Ross Young Scholars Program

The Ohio State University, Columbus, Ohio

The Ross Young Scholars Program is open to students **(approximately) 14-17** years of age. Applicants are judged on the quality of their thinking and the strength of their interest in the program, as indicated by their application questionnaire, essay, completed problems, and letters of recommendation.

The objective of the Ross Young Scholars Program is to break ground for those who have a strong desire to pursue careers in mathematics, science, or technology—in short, to provide a vivid apprenticeship to research.

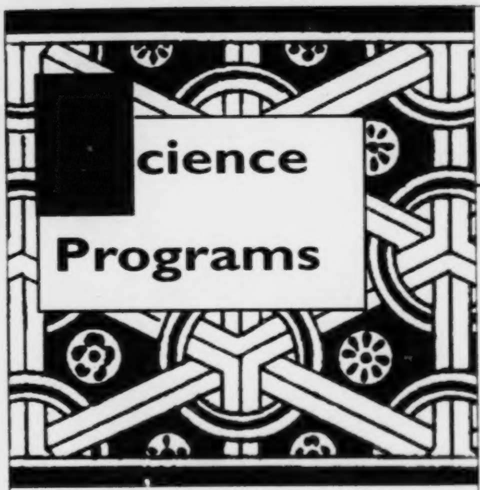
Chosen as a point of departure, discrete mathematics is very accessible and its ideas are increasingly important in all of mathematics, as well as in science and technology. Also, discrete mathematics offers opportunities for observing, conjecturing, testing conjectures for possible counterexamples, and ultimately achieving a measure of security through reasoned argument—all important components of scientific thinking. Thus, students involved in problem-solving not only acquire new techniques, but also learn to appreciate new ideas.

Number theory (taught to all first-year participants) serves as an underpinning for discrete mathematics, followed by combinatorics, among other things, in the second summer of the multi-level program. Participants who return for another summer build upon the mastery of ideas acquired the year before and enjoy opportunities designed for more advanced students.

Dates for the 1994 Ross Young Scholars Program are **June 19-August 13**. The fee of approximately $1,300 does not include incidental expenses. Some financial aid is available. The application deadline is **May 15.**

Professor Arnold E. Ross, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, OH 43210; (614) 292-1569; FAX (614) 292-1479. ■

Individual math courses are offered by programs listed under Talent Search, Young Students, College Credit, and Study Abroad.



Science Programs

The Connie Belin National Center for Gifted Education

The University of Iowa, Iowa City, Iowa

The Connie Belin Center offers two three-week intensive science programs: The Summer Space Science and Engineering Program for **Iowa residents** completing **grade 9, June 19-July 8,** is partially funded by NASA; students pay $350. The Summer Institute for Creative Engineering and Inventiveness for **residents of Iowa and its contiguous states completing grades 10 and 11, July 10-July 29, 1994, and May 6, 1995,** is funded by a National Science Foundation grant and is free to participants.

Iowa students must be nominated by their high school counselor; students in other states must be nominated by their State Department of Education or Department of Public Instruction. Nominations are due **February 15, 1994.**

The Connie Belin National Center for Gifted Education, the University of Iowa, 210 Lindquist Center, Iowa City, Iowa 52242-1529; (319) 335-6148 or (800) 344-3450; FAX (319) 335-5386.

CTY-SEA Program in Oceanography

Center for Talented Youth
The Johns Hopkins University

The CTY-Sea Education Association (SEA) program offers the opportunity to study oceanography from both theoretical and practical perspectives to students **15 years old by August 7** with qualifying SAT scores.

The CTY-SEA program includes two weeks ashore in Woods Hole, Massachusetts, and one week at sea on board a research sailing vessel, the SSV ***Corwith Cramer.*** On shore, students study the concepts of oceanography through lectures, workshops, and field excursions. Activities during the cruise emphasize interrelationships between the biology, geology, and physical characteristics of the waters south of Martha's Vineyard and Nantucket Shoals.

Dates for the 1994 CTY-SEA program are **August 7-27.** The fee is $2,100. Spaces for 22 students will be filled on a first-come, first-served basis. The application deadline is **April 30.**

CTY-SEA Program in Oceanography, The Johns Hopkins University, Baltimore, MD 21218; (410) 516-0337; FAX (410) 5116-0804.

Duke TIP Scientific Field Studies

Duke University Talent Identification Program

High school students with qualifying SAT or ACT scores may participate in Duke TIP Scientific Field Studies in Costa Rica, Virginia, or Colorado and Wyoming. Activities include hands-on scientific study, field excursions to various ecological sites, and group and individual projects.

Dates for the Costa Rica trips are **June 23-July 13 and June 29-July 19** for students completing **grades 9-11;** and **July 18-August 8** for those completing **grade 11;** the fee is $2,190.

Three additional programs are open to students completing **grades 10 and 11:** Mountain Lake, Virginia; **July 31-August 13;** $1,240. Field Studies in the High Desert, New Mexico, are **June 19-July 2;** $1,350. Rocky Mountain Ecology in Colorado and Wyoming; **June 20-July 11;** $1,740. Fees do not include travel costs to the site. The application deadline is **May 2.**

Mike Gunzenhauser, Coordinator for PreCollege Programs, Duke University, Box 90747, Durham, NC 27708-0747; (919) 684-3847; FAX (919) 681-7921.

Dr. Bessie F. Lawrence International Summer Science Institute in Israel

Weizmann Institute of Science

Highly able students completing **grade 12** who have **independent research experience** are eligible for the month-long Dr. Bessie F. Lawrence International Summer Science Institute held in Rehovot, Israel. Seventy-five students from Europe, Asia, the Americas, and Israel participate in this intensive residential program and work with Weizmann Institute researchers.

Studies are conducted in English. Working in groups of two or three, students choose a current topic in biology, chemistry, physics, mathematics, or computer sciences for laboratory research. After three weeks at the Institute, the group shifts to a field school in the Negev desert in the southern part of Israel for field research in life systems, geology, and climatology.

Dates for the 1994 Summer Science Institute are **July 6-August 5.** All program costs, including air transportation and housing, are covered by full scholarships available to qualifying students. The application deadline is **March 1.**

Diane Sarnoff, Dr. Bessie F. Lawrence International Summer Science Institute, American Committee for the Weizmann Institute of Science, Suite 117, 51 Madison Avenue, New York, NY 10010; (212) 779-2500; FAX (212) 779-3209. ■

Science courses are also offered by programs listed under Talent Search, Young Students, College Credit, and Study Abroad.

SERIOUS ABOUT SCIENCE? *Keep this program in mind for the future.*

RSI: Research Science Institute, Center for Excellence in Education

The annual Research Science Institute, offered by the Center for Excellence in Education in collaboration with the Massachusetts Institute of Technology, is a *free* program for qualified students completing *grade 11.* Although the February 1 deadline for this year's program has passed, high school sophomores and younger students should note it for upcoming summers.

Acceptance to RSI is intensely selective and based on PSAT scores, high school transcript, personal essay, and recommendations from teachers. The selection committee considers not only academic excellence but also demonstrated leadership in community and school activities and the potential for leadership in science and math.

About 50 students spend six weeks living on the MIT campus, working with renowned scientists/mentors on highly sophisticated projects that would be suitable for submission to the Westinghouse Science Talent Search. They also attend the RSI Distinguished Guest Lecture Series, featuring leaders in science and the humanities, and enjoy cultural and scientific field trips on weekends.

Maite P. Ballestero, Center for Excellence in Education, 7710 Old Springhouse Road, McLean, VA 22102; (703) 448-9062.

ollege Credit

Other programs offered at Duke, Johns Hopkins, CY-TAG, and WCATY are listed under Talent Search.

More and more universities are opening their doors in the summer to enroll high school students who earn college credits along with undergraduates while enjoying a taste of campus life. (Even colleges without official precollege programs often permit qualified students to register for summer courses on an individual basis, so be sure to explore options at any college that interests you.)

The Advanced Placement Academy is included here because many colleges and universities grant college credit and/or advanced standing to incoming freshmen who have earned high scores for Advanced Placement courses. One advantage of this program is that students take the AP exam at the end of the course, rather than having to wait for the test administration the following May.

Duke PreCollege Prograı

Duke University, Durham, North Carolina

College credit is also given for some of the Duke TIP courses listed under Talent Search.

n the residential Duke PreCollege Program, students completing **grade 11** enroll in undergraduate summer courses taught by Duke faculty members. Options include anthropology, art, biology, chemistry, computer science, engineering, English, foreign languages, history, mathematics, music, philosophy, physics, political science, psychology, religion, and sociology.

Dates for the 1994 Duke PreCollege Program are **June 24-August 7**. The fee is $3,940. Need-based financial aid is available. Preference is given to applications received by **March 15**.

Mike Gunzenhauser, Coordinator for PreCollege Programs, Duke University, Box 90747, Durham, NC 27708-0747; (919) 684-3847; FAX (919) 681-7921.

Hopkins Summer Pre-College Program

The Johns Hopkins University
Baltimore, Maryland

he Hopkins Summer Pre-College Program, sponsored by the School of Arts and Sciences, offers college credit to academically talented high school students. This five-week residential and commuter program is open to students completing **grades 10, 11 and 12**, who will be at least 16 years of age by July 1, 1994, and who have a GPA of at least 3.0 in their high school or preparatory school.

Students attend classes with undergraduates in one of three programs—American government, medical science, or college preview—and complete two undergraduate courses. Options include chemistry, literature, political science, writing, psychology, economics, languages, math, art, sociology, classics, earth science, history, humanities, physics, cognitive science, and computer science.

Precollege students also participate in workshops on study skills, time management, and the college admissions process; tour Hopkins research facilities; and travel to cultural and historical sites in the Baltimore-Washington area.

Dates for the 1994 Hopkins Summer Pre-College Residential and Commuter Program are **July 4-August 5**. Fees depend on the program selected. Need- and merit-based financial aid is available, but limited. The application deadline **is April 18.**

Patricia Palmer Sine, Director, Hopkins Summer Programs, The Johns Hopkins University, 230 Mergenthaler, Baltimore, MD 21218; (410) 516-4548; FAX (410) 516-6017.

Iowa Scholars Academy Office of Precollegiate Programs for Talented and Gifted (OPPTAG)

Iowa State University, Ames, Iowa

he Iowa Scholars Academy accepts students who are completing **grades 11 and 12** and have exceptional PSAT, PACT, SAT or ACT scores. They may earn up to ten university credits by taking Iowa State summer courses such as calculus, chemistry, physics, zoology, psychology, and English.

Dates for the 1994 Iowa Scholars Academy summer session are **June 11-August 6**. The fee is about $1,800, depending on the number of credits taken. Financial aid may be available. The application deadline is **April 1**.

Teresa Argo, Program Coordinator, Iowa State University, W172 Lagomarcino Hall, Ames, IA 50011-3180; (515) 294-1772; FAX (515) 294-6424.

WCATY Senior

Wisconsin Center for Academically
Talented Youth
Madison, Wisconsin

Other WCATY programs are listed under Talent Search and Young Students.

CATY Senior offers a summer residential program on the campus of the University of Wisconsin-Madison to students with qualifying SAT or ACT scores who are completing **grades 11 and 12**. Participants receive college credit for taking an undergraduate course, Introduction to Philosophy.

Dates for WCATY Senior 1994 are **June 12-July 1**. The fee is $1,350. Need- and merit-based financial aid is available for Wisconsin residents. Applications are due **May 1**.

Deborah Katz Hunt, Program Director, WCATY, Suite 120, 8017 Excelsior Drive, Madison, WI 53717; (608) 831-6144; FAX (608) 836-3893.

Advanced Placement Academy

The Connie Belin National Center
for Gifted Education
The University of Iowa, Iowa City, Iowa

Other Connie Belin Center programs are listed under Science.

he Advanced Placement Academy allows extremely able students to complete an intensive, six-week AP course, followed immediately by the AP examination. Students completing **grades 10-12** are considered for admission based on standardized test scores, grade point average in a specific subject area, student essay, and recommendations from two teachers; strong evidence of motivation in the subject area and of maturity to succeed in a residential setting are required.

Three AP courses and examinations are offered for summer 1994: Calculus AB, US Government and Politics, and English Literature and Composition. A maximum of twenty students will be selected for each AP course; each student may take only one course.

Dates for the 1994 AP Academy are **June 19-July 29**, with the AP examinations to be given on July 29. The fee is $2,300; some scholarships and need-based financial aid are available. Admissions are made on a rolling basis up to a final deadline of **March 1**.

Advanced Placement Academy, The Connie Belin National Center for Gifted Education, 210 Lindquist Center, The University of Iowa, Iowa City, IA 52242; (319) 335-6148 or (800) 336-6463; FAX (319) 335-5151. ■

tudy Abroad

The Weizmann Institute program in Israel and Duke TIP Field Studies in Costa Rica are listed under Science.

Center for Excellence in Education

he Center for Excellence in Education, parent of the annual Research Science Institute (RSI) for students academically talented in mathematics and science, offers mini-courses taught in English in three international locations: Bulgaria, Italy, and France. Qualifying students who have completed the equivalent of **two years of high school** may choose to study math only, humanities only, or a math/humanities combination. The mathematics coursework requires strong achievement in mathematics through Algebra II.

American University, Blagoevgrad, Bulgaria: Professors who have coached the Bulgarian International Math Olympiad (IMO) teams and are associated with the Bulgarian Academy of Science teach number theory. A Bulgarian professor of the American University teaches the history and art of Bulgaria. Students spend a weekend in Thessaloniki, Greece. **June 25-July 11**, $1,300.

University Louis Pasteur, Strasbourg, France: An internationally known professor of mathematics who is a member of the faculty of the Institut de Mathématique, teaches a two-week mini-course in number theory. A ten-year veteran of the RSI professorial staff focuses on a French classic during the humanities course. The last weekend is spent in Paris. **July 9-July 25**, $1,600.

University of Rome, Rome, Italy: A professor on the Mathematics, Physics, and Complementary Mathematics faculty, who has coached the Italian IMO team, will teach number theory. A professor from the Institute for Art History will teach The History of Architecture in Rome from the Renaissance to the Baroque Period. Weekend trips will be taken to Florence, Pompeii, Naples, and the Isle of Capri. **June 25-July 11**, $1,600.

Students and staff live in a comfortable university residence. Program costs cover tuition, course materials, lodging, breakfast and dinner on weekdays (only breakfast on weekends), and ground transportation; airfare is not included. A high school transcript and recommendations from two teachers must accompany the application; the deadline is **March 1.**

Center for Excellence in Education, 7710 Old Springhouse Road, McLean, VA 22102; (703) 448-9062; FAX (703) 442-9513.

CTY International

Center for Talented Youth
The Johns Hopkins University

TY in Germany: CTY offers a German Exchange Program in collaboration with Bildung und Begabung e.V., an organization dedicated to providing appropriate educational opportunities to highly able students. Through this exchange, selected American students join German students in the German equivalent of CTY. The two-and-a-half-week academic program is preceded by a week-long home stay with a German family whose son or daughter also participates in the program. During the academic session, each American student rooms with a German-speaking participant, and all courses are conducted in German.

To be eligible, students aged 16-19 must have **strong German language skills,** especially good speaking ability. To apply, students submit a letter of interest to CTY, explaining how they acquired proficiency in the language (by studying at a local school or college, participating in other exchange programs, living abroad or in a bilingual family, etc.). The selection process includes a telephone interview with a German-speaking member of the CTY staff.

Dates for the 1994 CTY German Exchange Program will be announced in February. The fee is $1,680, not including airfare. The application deadline is **April 8.**

German Exchange Program, Academic Summer Programs, CTY, The Johns Hopkins University, Baltimore, MD 21218; (410) 516-0337; FAX (410) 516-0804.

CTY Ireland: Independently operated by Dublin City University, CTY Ireland is modeled on the JHU CTY program; courses reflect CTY philosophy and pedagogy. Tentative offerings include drama, literature, and writing; archaeology; biotechnology; computer applications; mathematical modeling; psychology; media and communication; and geopolitics.

Dates for the 1994 CTY Ireland program are **July 10-29.** The fee is **$1,500**, not including airfare; there is an $80 discount for early registration. JHU CTY endorses, but does not directly administer, this program; correspondence and requests for brochures should be directed to CTY Ireland in Dublin.

The Centre for Talented Youth, Dublin City University, Dublin 9, Ireland; 011-353-1-7045634; FAX 011-353-1-7045693.

Duke TIP International

Duke University Talent Identification Program

IP International offers six international study programs for students completing **grades 8-11** (unless otherwise noted):

TIP in China: Participants room with Chinese students while studying Chinese life and language at Beijing Teachers College. Afternoons are spent learning oriental calligraphy, practicing martial arts, and playing Chinese musical instruments. Students visit the Chinese National Opera, the Forbidden City, and the Great Wall. The final week is spent at a university in Shanghai. **July 13-August 11**, $2,080.

TIP in England: Participants choose to study Shakespeare, and discover the London of Elizabeth I and historic theaters; or choose international relations, and learn about England's post-World War II era. Both courses include excursions to museums, cathedrals, the Tower of London, Hampton Court, and Greenwich. **June 21-July 12**, $2,280.

TIP in France: Before leaving for France, participants read up on French history and culture: after returning, they complete a special project for college credit. This 16-day tour begins in Paris, ends along the Côte d'Azur, and includes visits to Caen, St. Malo, the Loire Valley, Nîmes, and Nice. Limited to students completing **grades 9-11;** dates and cost to be announced. For this program only, the cost includes airfare from Atlanta.

TIP in Germany: Students in the German Exchange Program spend a week living with a German family, attend classes taught in German with highly able students at Bildung und Begabung e.V., take local excursions, and end with a four-day tour of Berlin. **July 6-August 3** (tentative dates), $1,985.

TIP in Italy: While studying Roman archaeology and the Italian language, students visit the Roman Forum, Colosseum, Catacombs, and Vatican, and take day trips to ancient sites near Rome. **July 19-August 9,** $2,350.

TIP in Japan: Participants study Japanese language and culture while traveling from home base in the seaport of Toyama to Tokyo, Kyoto, and the Tatayama Mountains. Students speak a mixture of Japanese and English and spend a weekend living with a Japanese family. **July 22-August 15,** $2,380.

Costs for international programs (except TIP in France) do not include airfare. The application deadline is **April 15.**

Kayla Hamilton, Admissions Officer, Duke University Talent Identification Program, Box 90747, Durham, NC 27708-0747; (919) 684-3847; FAX (919) 681-7921. ■

rts Programs

Numerous excellent summer programs are offered in the visual and performing arts, including these two well-established and highly-respected options. Your own music, drama, dance, or art teacher may know of other possibilities.

Interlochen Arts Camp

Interlochen, Michigan

nterlochen is located in northern Michigan on a 1200-acre wooded campus between two large clearwater lakes. Emphasis is on a balanced program of study, sports, and relaxation. Students eligible for the High School Division include those completing **grades 9-12;** Intermediate Division, **grades 6-9;** and Junior Division, **grades 3-6.**

Training is available in music, visual arts, dance, and theatre. Professionally trained faculty are supplemented by visiting performers who conduct master classes and workshops for students. During the '93 season, cellist Yo-Yo Ma performed with the World Youth Symphony Orchestra; and the Detroit Symphony Orchestra with conductor Neemi Jarvi was in residence for four days of master classes, private lessons, chamber music performances, and a full orchestral program.

Dates for Interlochen Arts Camp '94 are **June 26-August 22.** Older students are accepted only for the full, eight-week session; the Junior Division provides a four-week alternative. The fee of $3,440 (or $2,065 for four weeks) covers room and board, all class courses and most group instruction, camp uniform, all recreational facilities, and admission to faculty and student performances. Additional fees charged for supplies, laboratory costs, and private/semi-private lessons are listed in the application. Early application is recommended; requests for financial aid must be postmarked by **February 15.**

Interlochen Arts Academy, PO Box 199, Interlochen, Michigan 49643-0199; Admissions Office (616) 276-7472; FAX (616) 276-6321.

Tanglewood Institute

Boston University

his summer program in residence at Tanglewood in Lenox, Massachusetts, is offered in conjunction with the Boston University School for the Arts and the Boston Symphony Orchestra. Students **ages 15-18** who qualify by audition are eligible for the Young Artists programs in orchestra and chamber music, vocal, piano, and composition. They may also attend seminars in clarinet, harp, saxophone, Empire Brass, and Listening and Analysis. The Tanglewood Institute also offers a Visual Arts Program. Admission and placement are dependent upon a portfolio evaluation. College credit is available for most programs.

Dates for the 1994 Tanglewood Institute are **June 27-August 20.** The fees are approximately $3,700 for eight weeks and $2,300 for four weeks. Merit- and need-based scholarships are available. The application deadline is **March 14.**

Boston University Tanglewood Institute, 855 Commonwealth Avenue, Boston, MA 02215; (800) 643-4796. ■

NEWS AND VIEWS FROM ACADEMIC SUMMER PROGRAMS

"I have never met teachers so willing to challenge, to provoke imagination, to laugh. You are not mere students to them; you are friends in the pursuit of knowledge." Maria D'Amore, South Nyack, NY

"I found a place where I was valued for who I am, not what I look like. Here I was myself, not part of the crowd." Chanin Petprasit, Walnut, CA

"Learning becomes easier when you are with other people who also want to learn." Mark Ellenbecker, Germantown, WI

"I was always amazed that three weeks spent with other teenagers in such an intensive academic environment could produce stronger friendships than those I had with people I'd known all my life." Meghan Cadwallader, Schuylerville, NY

"I had a chance to study subjects most students my age have barely heard of. Whole new worlds were given to me to enjoy." Rachael Schechter, West Chester, PA

"It's a great experience to walk into a classroom and know that everyone there, not just two or three, is as smart as you." Andrew Mast, Guilderland, NY

"For me, these summer programs offer a unique academic opportunity. Where else could I take hands-on courses in paleobiology or genetics? Certainly not at school!" Jeremy Hlavacek, Leonia, NJ

Quotes are not matched with photos.

"Never before had I been surrounded by such an amazingly talented, diverse (in nationality, ethnic background, geographical origin, political perspective, philosophy, and outlook), and overwhelmingly friendly group of people. The six weeks whizzed by, sleepless and frenetic. There was so much to do, so many people to meet and talk to, that sleep seemed a triviality." Megan Moore, Hayward, CA

"The classroom atmosphere is so relaxed and comfortable. We laugh a lot, but there's almost always a heated debate going on, and the teachers and TAs are constantly pushing you to do more, to be more. Sure we learn equations and poetic meter and robotics, but it goes so much deeper. We learn our own self-worth." Maria Shapiro, Andover, MA

"One minute you may be arguing about color symbolism in The Great Gatsby; *the next you may be dancing about the quad playing kazoos. Summer programs balance fun and intellect."* Rebecca Nathenson, Menlo Park, CA

"My mentor, TAs, and others told me that college courses would entail similar projects and paper writing, so the tips I learned from experts in the field will undoubtedly be useful. I think I was able to get a feel for the patience, persistence, aggravation (sometimes!), and rewards involved in scientific research." Alice Lee, Cranston, RI

More summer options than you ever knew existed:

- ***Kids on the Move: A Read-about-It, Go-There Guide to America's Best Family Destinations*** (2[illegible] pp., $13.95), by Susan M. Knorr and Margaret Knorr. Order from Free Spirit Publishing, 400 First Avenue North, Suite 616, Minneapolis, MN 55401; (612) 338-2068.
- ***Directory of Student Science Training Programs for Precollege Students*** (61 pp., $3.00). Order from Science Service, Inc., 1719 N Street, NW, Washington, DC 20036.
- ***Educational Opportunity Guide: A Directory of Programs for the Gifted*** (240+ pp., $15.00), published by Duke University Talent Identification Program. Order from Duke TIP, Duke University, PO Box 90747, Durham, NC 27708-0747; (919) 683-1400; FAX (919) 683-1742.
- ***Program Opportunities for Academically Talented Students*** (100+ pp., $10.00), published by the Center for Talented Youth. Order from CTY Publications and Resources, The Johns Hopkins University, Baltimore, MD 21218; (410) 516-0245; FAX (410) 516-0804.
- ***Smart Vacations: The Traveler's Guide to Learning Adventures Abroad*** (318 pp., $14.95), Council on International Educational Exchange. Order from St. Martin's Press, 175 Fifth Avenue, New York, NY 10010.
- ***Summer On Campus: College Experiences for High School Students*** (392 pp., $9.95), published by the College Board. Available in bookstores or by order from The College Board, 45 Columbus Avenue, New York, NY 10023-6992.
- ***Summer Opportunities for Kids and Teenagers*** (980 pp., $24.95), includes academics, arts, travel, camps, and sports; published by Peterson's Guides. Available in bookstores or by order from Peterson's, Box 2123, Princeton, NJ 08543-2123.

THE COACH'S CORNER

by Chengde Feng

Chengde Feng is an experienced math teacher who has coached students in the US and China in preparation for national mathematics competitions. We asked him to create a few problems for those of you who enjoy a good mathematical challenge. More problems by Mr. Feng will appear in future issues of *Imagine*, and the solutions to these problems will appear in the March/April issue.

1. Assume that you have five beads: one green (G), two white (W_1, W_2), and two black (B_1, B_2). One of the white beads weighs *P* grams and the other *Q* grams. One of the black beads weighs *P* grams and the other *Q* grams. Using your beam balance only twice, how can you determine the weights of each of the five beads without knowing whether the green bead weighs *P* or *Q* grams, if *P* is slightly greater than *Q*?

2. Find all the ordered pairs of positive integers (x,y) such that: $^1/_x - ^1/_y = ^1/_{1994}$.

3. Let N=1234567891011121314...979899, a 189-digit number where the degits are obtained by writing the integers 1 through 99 in order, and M=111...11, a 1994-digit number with 1 as each digit. Find the sum of the digits of P, where P=N×M. ■

Mr. Feng teaches mathematics at the Oklahoma School of Science and Mathematics (OSSM). He and his wife were both highly respected mathematics teachers and coaches in Tianjin, People's Republic of China, where they directed a branch of the Johns Hopkins Study of Mathematically Precocious Youth. Mr. Feng was member of the staff of SMPY at Johns Hopkins for one year before accepting his present position at OSSM.

AND FOR THOSE OF YOU WHO LIKE

VeRbal FuN . . .

Q: What is a "satyr"?

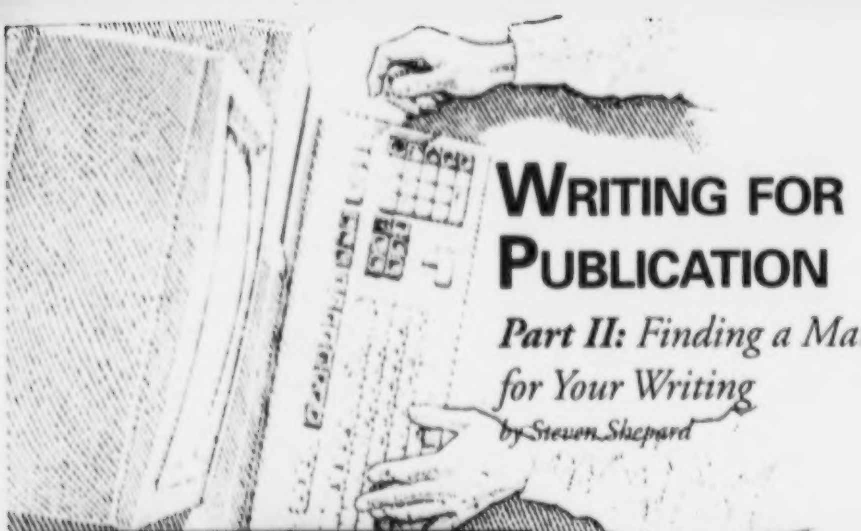
A: ***A man with a goat where his trousers ought to be.***

If this doesn't sound to you like a Q & A from a typical American quiz show, you're right; it's from the British Broadcasting Corporation (BBC) radio quiz show, "My Word!" Each week, four regular contestants come up with creative word definitions and derivations, identify lines of poetry, and compose improbable explanations of how certain famous quotations came to be said. In one such explanation, for example, the Biblical adage "Many are called, but few are chosen" became "Many are cold, but few are frozen." In another, Thoreau's phrase "The mass of men lead lives of quiet desperation" reappeared as "The massive men need wives of quiet respiration." The show may be more fun than educational, but it can be both.

"My Word!" airs on many of the National Public Radio (NPR) affiliate stations throughout the United States. Check with your local NPR-affiliate. Broadcast times for some major cities and university towns are listed below:

Albany	WAMC	Wed, 8:05 pm
Ann Arbor	WUOM	Sat, 12 noon
Atlanta	WABE	Thu, 6:30 pm
Bloomington	WFIU	Sat, 11:00 am
Boston	WBUR	Sun, 10:30 pm
Cincinnati	WGUC-FM	Sun, 7:30 pm
Chicago	WFMT	Sun, 7:30 pm
Indianapolis	WICR	Sun, 6:00 pm
Iowa City	WSUI	Thu, 8:00 pm
Jacksonville	WJCT-FM	Sun, 1:30 pm
Kansas City	KANU-FM	Sun, 10:30 am
Knoxville	WUOT	Sun, 1:30 pm
Los Angeles	KUSC	Sat, 9:00 pm
New Orleans	WWNO	Sun, 4:00 pm
Omaha	KIOS-FM	Sat, 4:30 pm
Philadelphia	WHYY-FM	Wed, 11:30 pm
Portland, ME	WMEA	Thu, 7:00 pm
Raleigh-Durham	WUNC-FM	Wed, 7:30 pm
Salt Lake City	KBYU-FM	Sat, 4:30 pm
San Antonio	KSTX	Sun, 4:00 pm
San Francisco	KALW	Fri, 7:30 pm
Washington, DC	WETA-FM	Sun, 12 noon

"My Word!" is also carried by WFMT's (Chicago) Fine Arts Network, a cable network available in 235 cities and 35 states. **Call (800) USA-WFMT for more information.** ■



WRITING FOR PUBLICATION

Part II: Finding a Market for Your Writing

by Steven Shepard

Photo reproduced by permission of Landmark Editions, Inc.

Writing for Publication, Part I: Learning How to Write appeared in the November/December 1993 issue of *Imagine*, along with an article by Steven Shepard, who recounted his experiences with editors after winning the National Written and Illustrated By . . . Awards Contest for Students. In addition to *Fogbound*, his award-winning novel published by Landmark Editions, Steven's creative work has appeared in *Stone Soup*, *Creative Kids*, and *Young Voices* magazines. He is a 15-year-old freshman at Virginia's Thomas Jefferson High School for Science and Technology.

As a good writer who wants to be published, you must impress your editors before you'll have the chance to impress your readers. *And* you must do it in under two minutes.

Editors will take only two minutes to decide whether your story merits serious consideration. In that short time, you must introduce yourself, list your accomplishments, and briefly summarize your story.

It ain't easy.

Understand that the story on which you spent so much time won't be handed to an editor on a silver platter. Far from it. Your work will be buried in a stack of other submissions lovingly referred to as the "slush pile." Most pieces slide directly from slush to trash. But a good cover letter can save the day. A cover letter placed before your story tells an editor everything she needs to know in order to decide whether she should read your work. If your cover letter has done its job, she'll read on eagerly. If it hasn't, her eyes will glaze over, and the best you can hope for is a quick skim before your submission lands in the trash.

Good cover letters aren't the only way to help your story into print. You should also do some research at your local library. Look through a book like the *1994 Writer's Market* to find some magazines likely to be interested in your piece. Either check out some back issues of each magazine, or send away for them. Nearly every publication has some old issues they're happy to sell.

Once you've got a copy, read through it. Jot a few notes down. Be looking for important elements of the magazine's style:

Tone. Are the articles in this magazine funny or serious? Would they like a news story on the outcome of a local dirt-bike race, or would they publish a human-interest piece on a handicapped biker instead?

Format. Sidebars are small mini-articles beside the main piece. Does this magazine use sidebars, and should your story use them? How long are the articles?

Illustration. Are there photographs or artwork to accompany the articles? Can you provide illustrations for your own piece? Editors love an author who can supply these extras.

Content. What kind of stories does this magazine include? Would they want a fiction story about a young dirt-biker, or would they use the space to print a list of local dirt-bike races?

Audience. What age group is this magazine designed for? Would they want a piece detailing modern variations of handle-bar grips or an article on learning to ride a bike?

Finally, consider how your story would fit in. What needs to be changed about it?

You'll find the answers to these and other questions just by taking the time to read through previous issues of the magazine. Even so, it's a good idea to send for a copy of the magazine's submission guidelines. Write a short note and mail it, along with an SASE*, to the magazine's submission editor, whose name you'll find inside the magazine. You'll receive a sheet full of important information.

It may be tempting to use only these guidelines and to skip looking through some back issues. Resist the craving, and do the work. There is no substitute for reading the actual publication.

Armed with both the guidelines and your notes on back issues, find the best magazine for your story, then tailor your piece to fit that publication's needs. Incidentally, if you decide to send your story to more than one magazine, you're obliged to tell the editors that it is a *simultaneous submission.*

Most magazines are written by adults, the rare exception being children's magazines that publish stories *by kids, for kids*. Sometimes an adult-written magazine will provide a page for student writing, but to break out of that niche, you'll have to write like an adult.

You might even have to pass yourself off as an adult. A few magazines won't even read student submissions—they consider doing so a waste of time. If you have even an inkling that a publication may reject student authors out of hand, simply don't state your age. Let them treat your work as if it were an adult's.

Even if you follow all of these suggestions, most of your writing will be rejected—unfortunately, a fact of the writing life. Even Madeline L'Engle's *A Wrinkle in Time* was turned down 47(!) times. If your favorite story doesn't work for one magazine, send it to another. Read rejection letters carefully; they may provide valuable advice.

Don't let yourself be discouraged. Don't let an editor's two-minute judgment define you as a writer. And whatever you do, don't stop writing.

***SASEs and SASPs**

Self-addressed stamped envelopes and self-addressed stamped postcards are the best ways to assist an editor in responding to your submissions. All she needs to do is stuff a letter in the SASE or check a "NO" box on the SASP, then mail it off. By taking care of these little things for her, you increase the likelihood that you'll receive any response at all.

OUTWARD AND VISIBLE SIGNS

by Amanda Bell

Student writers featured in this issue of *Imagine* have all been creative in finding specialized venues for their work. You will notice that this story, the article on pages 3-4, and the poem on page 20 first appeared in publications other than those mentioned in Steven Shepard's list. So remember to use your imagination when looking for a publisher for your own work.

Amanda Bell wrote "Outward and Visible Signs" while taking Introduction to Writing, taught by Gregory L. Lichtenberg at CTY's summer '92 program at Skidmore College in Saratoga Springs, New York. Amanda is now 16 and in tenth grade at Ridgewood High School in Ridgewood, New Jersey. She is on the staff of her school's literary magazine and is active in a community service group and her church.

"Shut up, shut up! [illegible] make her shut up!" Chris muttered. I tried to ignore Chris, but I couldn't help speeding up my words and nervously twirling my split ends. "John the Baptist was the prophet that came before Jesus, andhewentaroundIsraelbaptizingpeople."

"Shut up!"

Mr. Smythe, our oozing confirmation instructor, kept smirking and nodding, expecting me to go on, disregarding Chris's nauseating behavior.

Later, while we were waiting for that Sunday's dismissal bell to ring at eleven, Mr. Smythe showed Chris how to make an improved paper airplane out of the Morning Prayer booklet, while we three girls picked at the pills on our stockings.

Later that year, we were all slouched in confirmation class again, waiting for the latest of a string of instructors to show up, when Mrs. Phipps poked her head in the door of our classroom and asked where Mr. Wilkie was. The four of us just stared back, until Heather said we hadn't even seen him. Mrs. Phipps left, and we were quiet once again while Chris made a paper airplane out of the Oxford Press's "Music for the Eucharist." I was thinking it was a good thing we weren't Catholic or Jewish, or we'd have this confirmation thing several times a week, instead of just during the Sunday service.

Then Ashley wandered in. Ashley—actually, Reverend Neal—is our curate at St. Elizabeth's. She was still wearing her vestments, and she carried a tape player, tapes, and something like a Kleenex box, with wine-colored birds on it. She sat down in the chair reserved for the instructor, smiled nervously, and said, "Mr. Wilkie is nowhere to be found, so I'm going to give you this kind of silly little sermon I gave the little kids this morning." She giggled a little. Chris rolled his eyes.

She popped a tape into the player. "Now close your eyes and listen."

We heard bird calls, rivers of them, the song we learned to call the Dawn Chorus in *The Lion, the Witch, and the Wardrobe.*

Click.

"Now open your eyes. What was it you heard?" Her voice had become level and quiet.

"Birds."

"Bird songs."

"Okay, very good. Now close them again."

[illegible] wolves, crying way out in the night. The sound was cold, clear, and bittersweet, [illegible] from the distance. We opened our eyes without being told.

"Wolves."

"This next one's different. Guess what it is while you listen." She was right. It was a strange series of whisperings, wailings, squeakings, and ripplings. When we opened our eyes, we were profoundly puzzled, and Ashley was smiling broadly. I guessed the noises were made underwater. Heather said it was a submarine, Liz shrugged, and Chris glowered.

"It's a mama dolphin calling to her baby underwater," Ashley explained. Heather, Liz, and I [illegible]; Chris shrugged. Ashley told us she thinks animals can speak to each other. She related how her dogs seem to tell each other it's dinner time in the kitchen or walk time on a summer evening. Then Ashley described an essay she'd read by Annie Dillard, about a man who tried to teach a little stone to talk.

"Every day, he'd take off the little piece of felt that it lived under, and he'd give it its…er… lesson." We all laughed. "But I wonder if, maybe, that stone is already talking—and we just don't hear it. And maybe that's how God speaks—through silence—and we just don't know how to listen."

We were all silent then, and I don't know that I heard God, but I had that light, cool feeling at the back of my neck, the one you get when someone gives you a present or says, "I love you."

Ashley picked the bird box up off the floor. She took out a rounded clear stone and passed the box to Heather.

"You may each take one," she said. "I gave these to the little kids, too."

She held her stone up to the light as I chose from the box. All the stones were clear, but clouded in the center. A few were tinged with pink. Finally, I chose a chestnut-shaped one that fit in the palm of my hand. I passed the box to Chris.

"It has a little dirt in the middle," mused Ashley. "Flawed. Sort of like the way we come before God."

On the Wednesday before our confirmation, we met with Walter Righter, our rector, and Ashley in the church parlor. Rev. Righter cautioned us that if we took our confirmation vows on Sunday but weren't really sure if we meant them, or didn't mean them at all, we would be lying. To everyone. We were quiet, thinking of the relatives who were to come watch, the parties and presents that were to be given, the new dresses that were to be worn. I thought, "There is such a thing as a white lie." But then I wondered. Ever since Ashley's sermon in the spring, I had come to see confirmation as something special, worthwhile, not just the end of having to go to Sunday School.

Ashley drove me home that evening. On the way, I asked her what she had done before she was a priest. What I really wanted to know was *why* she became a priest.

She told me she'd been a broker handling million-dollar loans in New York City. After years on the job, she started to wonder where all that money went. Did they make anything with it? Build anything with it? Or was everyone just on a sort of financial hamster wheel? And what about the loans the bank occasionally made to South Africa? Those questions were the beginning of her transition into the priesthood.

* * *

On the morning of my confirmation, I slipped that small, clear stone into a little plastic bag and pinned it to the label of my chalky blue dress. ■

A version of this essay appeared in the June 1993 issue of *The VOICE*, the official periodical of the Episcopal Diocese of Newark, New Jersey. Reprinted with permission.

Here's an example of a good cover letter:

Begin with a short introduction—just enough to transform yourself from a faceless submission into a real person.

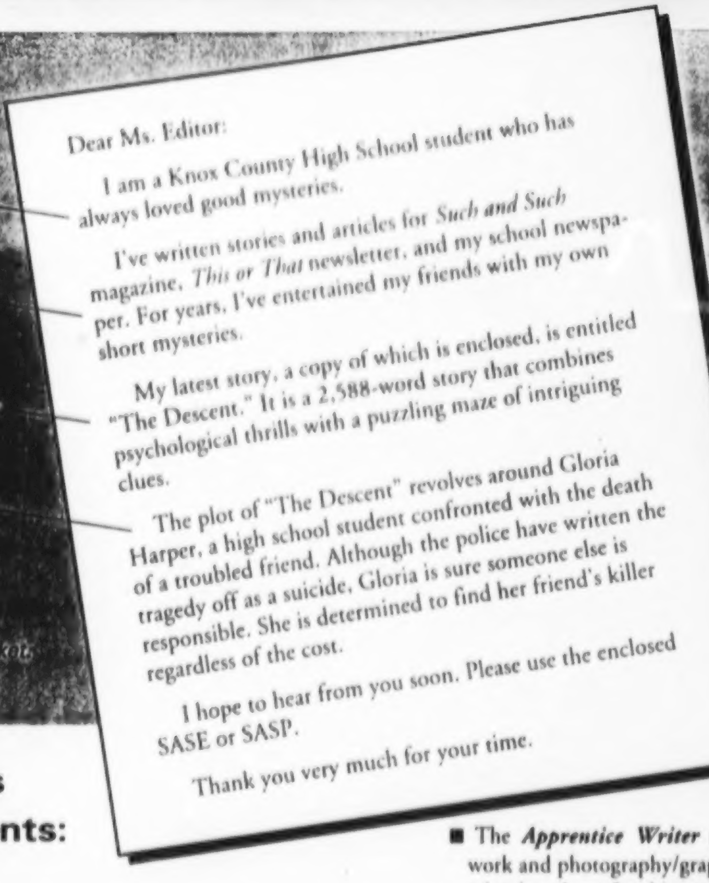
Follow this up with any writing credits you may have. If you don't have any, you can probably still come up with something relevant.

Next comes your most important paragraph, the hook, a quick and effective summary of your story. Make sure it is brief, yet gripping.

Phew. Now your story is out in the open, and with luck you've piqued the editor's interest. You can elaborate a little more.

All right. You've given the editor all she needs to know. It's time to get out of the way and let your story take over.

This letter is like a perfect touch pass to the basket. All your story needs to do now is tap the ball in.



Dear Ms. Editor:

I am a Knox County High School student who has always loved good mysteries.

I've written stories and articles for *Such and Such* magazine, *This or That* newsletter, and my school newspaper. For years, I've entertained my friends with my own short mysteries.

My latest story, a copy of which is enclosed, is entitled "The Descent." It is a 2,588-word story that combines psychological thrills with a puzzling maze of intriguing clues.

The plot of "The Descent" revolves around Gloria Harper, a high school student confronted with the death of a troubled friend. Although the police have written the tragedy off as a suicide, Gloria is sure someone else is responsible. She is determined to find her friend's killer regardless of the cost.

I hope to hear from you soon. Please use the enclosed SASE or SASP.

Thank you very much for your time.

Here are some publishers that accept work by students:

(and don't forget *Imagine!*)

- ***Stone Soup*** is a highly respected publication with a circulation of over 13,000. The magazine is filled entirely by student poems, stories, essays, and pictures. Authors whose work is accepted are paid $10.00. *Stone Soup Magazine, PO Box 83, Santa Cruz, CA 95063.*
- ***Merlyn's Pen: The National Magazine of Student Writing*** selectively publishes fiction, essays poems, and comments from students in junior high and the first two years of high school. All writers receive a detailed, personalized response within eleven weeks. Published authors receive three copies of the issue in which their work appears, plus a copy of *The Elements of Style,* by Strunk and White. *Merlyn's Pen, Inc., 98 Main Street, East Greenwich, RI 02818.*
- ***Creative Kids*** publishes *only* work from students in kindergarten through high school—cartoons, reviews, songs, articles, puzzles, photographs, comic strips, interviews, stories, art, games, editorials, poems, activities, and plays. Students receive a free copy when their work appears. *Creative Kids Magazine, PO Box 6448, Mobile, AL 36660.*
- ***Young Voices Magazine*** pays $5.00 for poems, essays, and stories by elementary through high school students. *Young Voices Magazine, PO Box 2321, Olympia, WA 98507.*
- ***Boodle Magazine*** publishes student writing and artwork from elementary school students. Those whose work are accepted receive two free copies. *Boodle Magazine, PO Box 1049, Portland, IN 47371.*
- ***WRITING! Magazine*** accepts student-written book reviews, questions for published adult authors, and quality articles by those in grades five and six. *General Learning Corporation, 60 Revere Drive, Northbrook, IL 60062.*
- The ***Children's Better Health Institute*** puts out six magazines for students in the elementary grades and includes student poems, drawings, jokes, and stories. *Children's Better Health Institute, PO Box 567, Indianapolis, IN 46206.*
- ***Landmark Editions*** annually sponsors a national contest for students in three age categories: 6-9, 10-13, 14-19. Entrants submit an illustrated book, 16-24 pages long, on any topic. Books are judged on originality and quality of writing and illustration. The three winners receive publishing contracts and royalties on the sale of their book. *National Written and Illustrated by . . . Contest, Landmark Editions, PO Box 4469, Kansas City, MO 64127.*
- ***Raintree Publishers*** sponsors an annual contest for students in grades four-six. The four winning stories are published in book form. *Raintree Publishers, 320 W. Wisconsin Avenue, Milwaukee, WI 53203.*
- The ***Apprentice Writer*** accepts written work and photography/graphics from high school students for this annual publication distributed to high schools and colleges throughout the Middle Atlantic States. The submission deadline is ***March 15, 1994.*** *Gary Fincke, Writing Program Director Susquehanna University, Selinsgrove, PA 17870-1001, (717) 372-4164.*
- ***The Concord Review: A Quarterly Review of Essays by Students of History*** encourages high school history students to submit papers on historical topics of national and international interest. Essays must reflect careful research and high standards of scholarship, use primary sources when possible, and include thoughtful in-depth discussion. They should be about four thousand words in length, have endnotes, and must be printed from a word processor or submitted on a Macintosh disk. *Will Fitzhugh, Editor, The Concord Review, PO Box 661, Concord, MA 01742, (508) 443-0022.*

The discipline of writing for publication promotes creative thinking and hones communication skills. Such effort will never be wasted, even if you don't find that perfect match with a publisher. If you are successful, you'll be thrilled to see your name and words on the printed page. And someday you might even be paid. ■

The New SAT:

What Will it Mean for You?

When the College Board announced coming changes in the SAT's format, rumors started to fly: calculators would be allowed; essays would be required; the entire test would be longer—or shorter. With so much conjecture in the air, it's been difficult to know what to expect from the new SAT, much less how to prepare for it. But information available from the College Board provides some answers to the questions students most commonly ask.

Why have they made these changes?

Donald Stewart, the president of the College Board, says they are simply part of the "ongoing evolution of the admissions testing program," which has undergone many content and format changes since 1926 when it was first administered.

In 1988, the College Board authorized the development of a new test to evaluate more accurately the kinds of skills needed by college students. Consequently, the new SAT emphasizes critical reading skills more than vocabulary in the verbal section and reasoning ability more than computation in the math.

Why have they changed the name?

The SAT's new name matches its new format; the "A" now stands for *assessment,* rather than *aptitude*. Stewart hopes that renaming the test will "correct the impression among some people that the SAT is a measure of something innate or impervious to change, regardless of effort or instruction." Relating a student's SAT scores to the difficulty of courses taken in high school, Stewart emphasizes that "the SAT reflects and rewards rigorous academic effort." To underscore this link, the SAT is now called *SAT I: Reasoning Test,* and the Achievement tests are now *SAT II: Subject Tests.*

How long will the new test be?

The Test of Standard Written English (TSWE) has been eliminated, so you will have more time to work on SAT I's math and verbal portions.

Instead of 60 minutes for 85 verbal questions, you have 75 minutes for 75 to 85 questions. The math section still includes 60 questions, but allows 75 minutes, instead of 60, for answers.

Time has been extended to help reduce student anxiety, although the conviction of many students that *just a little more time* would have raised their scores dramatically is not supported by the College Board's research.

Will calculators be allowed?

The College Board now ***recommends, but does not require,*** the use of a four-function, scientific, or graphing calculator on the math SAT I. Studies found that students who used calculators performed slightly better on the test than those who did not. But, while calculators do make certain problems easier to solve, they can make others even harder.

If a question asks you to conceptualize a given ratio and then solve it, a calculator can prevent computational errors. But if a question asks for an answer in radical form, a calculator that gives only decimal answers increases the likelihood of error. So you need to evaluate how best to solve each problem.

Will all of the math questions be open-ended?

Out of sixty questions on the new math SAT I, only ten will require you to arrive at your own answers.

The College Board admits that ideally students should solve nothing but open-ended math problems, and solutions should be evaluated for quality as well as correctness. However, with more than 1.8 million test takers a year, open-ended testing is just not feasible.

Instead, the College Board has developed a machine-scorable grid that accommodates all possible solutions: any positive number from 0 to 9999, including decimals and fractions. If the answer to a problem is .25, fractions such as 1/4, 2/8, or 4/16 are also correct. Or if the question asks for "the fraction *x*/7 [that] is greater than 2 and less than three," you may choose any possible number that replaces *x*. Only the answers, not the work that led to them, will be evaluated.

In trial tests, a few students made an error entering answers on the grid, but very few made more than one. The only answers students found consistently troublesome to grid involved repeating decimals. Currently, the SAT requires that answers be expressed to as many places as the grid allows: .666 and .667 would both be correct, but .66 and .67 would not. However, upcoming changes *may* require that all repeating decimals be expressed as fractions. So, before you take the test, be sure you understand what kinds of answers are acceptable.

How has the verbal section changed?

The antonym questions are gone. The test now relies on analogies to test verbal reasoning skills and on sentence completions to test vocabulary. There are many more reading comprehension questions: some require you to compare two separate passages on a related topic; others ask you to determine what a word means in context or to contrast one author's use of a word with another's. Such questions, the College Board argues, come much closer to the reasoning required of college students.

The verbal SAT I still does not include an essay. However, an essay is part of the new SAT II: Writing Subject Test, which has replaced the TSWE in measuring your command of written English. If you choose to take this test, you will have forty minutes to answer forty multiple-choice questions about English usage and twenty minutes to write an essay.

The new PSAT has adopted the format of the SAT I, so taking the PSAT in your junior year should give you the exposure you need. All SAT I bulletins contain a sample test for practice. But the best preparation for the new SAT is still those old standbys: study challenging subjects and read widely. ■

For more information about SAT I or SAT II:
Brad Quin
College Board
45 Columbus Avenue
New York, NY 10023-6992
(212) 713-8000

[illegible]

■ ■ ■

[illegible]

This on-going series is intended to aid prospective college students in their search by offering insiders' views of selected colleges and universities, as expressed by current undergraduates or recent graduates who have exceptionally high academic ability. These students share a general bias in judging undergraduate education: they all have high expectations for a college or university's academic standards, its institutional and instructional flexibility, and its respect for nurturance of emerging talent. In this issue, we focus on The Johns Hopkins University (JHU).

Note that the number of student reviewers is small. Consider their personal perspectives as only one component while you gather factual information and impressions from such other sources as college catalogs, site visits, talks with officials and students on campus, and the advice of your guidance counselor and teachers.

[illegible]

Our reviewers include thirteen students, who major(ed) in biology (2), biomedical engineering (3), economics (2), electrical engineering (2), English (1), environmental engineering (1), international relations (1), materials science & engineering (1), math (1), music (1), physics (1), psychology (1), and writing seminars (1). (The number of majors exceeds thirteen because several students have double majors.) Students' comments appear within quotation marks.

[illegible]

Reviewers gave high praise to the caliber of the faculty and the education Hopkins delivers. They noted that individual attention is available to students who assertively seek out professors.

"Excellent. Academically, JHU was tops for preparing students to think critically, study efficiently, and balance time. Additionally, the level of material presented in courses was very high—I was much more than adequately prepared for medical school."

"The instructors are of the highest caliber and are usually fairly accessible, especially in the upper level courses. An undergrad at Hopkins can take advantage of world-renowned graduate faculty in such departments as Writing Seminars, English, History, and Political Science. You have to show an avid interest, though."

"The absence of a core curriculum really emphasizes the Hopkins method of self-motivated instruction. In some humanities majors, you can choose most of your own classes and focus on what you want."

"It really depends on your department. I have had some wonderful experiences with profs in the Psych Department being helpful and accessible, but my engineer friends have not. Also, as an undergrad, you must be very outgoing with your profs; this is, after all, a very research-oriented school, and undergrads are not noticed unless they make themselves noticed."

"It varies. Obviously, in intro-level courses, individual help is harder to find. It seems that the students who do well are the ones who can learn on their own."

[illegible]

A running joke on campus is that Hopkins was recently ranked 297 out of 300 on a survey of the quality of social life at America's largest coed universities. (FYI: This admittedly unscientific poll was conducted by a group of students from Boston-area colleges. For comparison, the #1 ranked school was Florida State, Harvard was #122, and Yale was #290. The survey was published in the magazine, *Inside Edge*.) Although most of our reviewers reported that they are content with their own social lives, the prevailing response was that the overall social life at Hopkins is limited. The student housing is one factor: for the first two years, students live in dorms on campus; for the last two years, everyone lives off-campus. Despite their criticisms, all reviewers reported having made very good friends at Hopkins, and several commented that Baltimore has much to offer as a cultural resource.

"It's what you make it. Since JHU is small, one can become involved in several activities, and there are many opportunities to start new ones. If you want to have fun, there's a lot of it; but no one is knocking on your door asking you to go out. I have loads of fun here."

*"As a whole, the social scene at JHU is not dominated by any one kind of social group or activity—frats, sports, or clubs. This is both good and bad. It's good in that no one feels pressured to join a particular club or activity. It's bad in that the majority of students, who are not involved in such activities, are left to find their own fun on weekends without much structure to fall back on. JHU is certainly **not** a 'party school.' Upperclass social life revolves around the off-campus housing, as people come together and develop relationships that stem from the 'post-dorm' experience of living on your own. This creates a nucleus of friends and acquaintances who form your social circle at JHU."*

"Very good: find friends with whom you share interests and you're set. Baltimore has an excellent arts/music scene."

"I've liked my stay here, but I know a lot of people who are unhappy here. The best way to meet people is to join clubs you're interested in—be active!"

"The social life at Hopkins is totally lacking in student enthusiasm. I blame this on the students themselves. Most Hopkins students spend too much time locked in their rooms, studying."

"The morale here is low—there is no student spirit, partly because juniors and seniors disappear into apartments off campus."

"I think there is a kind of self-selection process at work in creating the Hopkins student body (and social life). People who come here know Hopkins' reputation for having an awful social life, but they choose to come anyway. The majority of Hopkins students don't consider social life to be a very high priority in choosing a college; and once they get here, their lack of involvement in extracurricular activities is part of why the cycle continues."

[redacted]

The excellent academics and opportunities for research, the small size, and the friends reviewers have made were cited most often. Several also wrote that they really enjoy the highly competitive atmosphere of Hopkins.

"Excellent academics, diverse students (in all aspects), and a small liberal arts college atmosphere at a major university made Hopkins a great experience."

"Lots of opportunities to do research with outstanding people in their fields. If you are aggressive about it, you can really do a lot and get invaluable help and advice as you formulate your future plans."

"I enjoy the smallness of the school, and I like the pressure here—I thrive on it. I especially enjoy Peabody Conservatory—I love my classes there."

"The people I've met and the friends I've made. The research/volunteer opportunities at the Medical School are impressive."

"The competitive atmosphere and the high standards imposed by professors and retained by most students."

[redacted]

The highly competitive and goal-oriented atmosphere also has a dark side, and this was the feature most often cited in response to this question.

"The attitude that many students have seems to be extremely—sometimes overly—competitive. Learning is often sacrificed for opportunities to out-do one's classmates. Often, instead of collaborating, students are pitted against each other to see who survives. The competitive atmosphere can turn cut-throat, especially in pre-med and engineering courses (especially in the labs)."

"The heavy pre-professional focus of the students; most people are here to go on to further education. Many people are very concerned with building their résumés."

"I feel that if you weren't highly focused before starting college, JHU would make it worse! It seemed like only students who really knew what they wanted succeeded at JHU."

[redacted]

Reviewers agree that, while many kinds of people find a niche at Hopkins, the student most compatible with the academic and social demands of the place is one who can handle stress and a heavy workload and is "focused on academic goals and does not need a great social life."

THE JOHNS HOPKINS UNIVERSITY

Baltimore, MD 21218
(410) 516-8171

- 4-year private coed university
- Campus lies between urban and suburban neighborhoods in Baltimore.
- Semester system, January intersession.
- Full-time undergraduate enrollment 1993-94: 2,123 men; 1,255 women.
- Special features: Space Telescope Science Institute; Applied Physics Lab; associated schools include Peabody Conservatory, School of Advanced International Study (SAIS), School of Medicine, and School of Public Health.

"Someone who is strongly academically motivated, does not give up in tough situations, can deal with a certain level of peer pressure, has a good sense of humor about his/her shortcomings, and does not need regular sleep. Being a born prodigy would help...."

"Someone who is motivated, future-oriented, and dedicated."

"A cosmopolitan, independent, city-loving person who does not need to be pampered. Someone who knows what they want out of their education and can go after it. Someone who handles stress well and can perform under pressure. No naive, faint-hearted introverts should come here."

"We have all kinds of people here, and in the end, everyone finds his/her niche. In general, you need to be very driven, and you have to be socially creative—to create a sociable and fun life out of very limited resources."

[redacted]

The votes were mixed. Five reviewers said yes, four said no, and the remainder had mixed feelings.

"Absolutely! I had the chance to study something in which I was really interested, to meet fascinating, driven, motivated people, and to explore my personal interests."

"Yes. Despite all the bickering about the social scene and the cost of the tuition, I still had a wonderful time at Hopkins, making some good friends and learning some things along the way."

"Not necessarily. I made my decision based on a very limited set of criteria. If I had taken into account cultural opportunities, social life, environment, and other factors that really are integral parts of your college experience, I might have gone elsewhere. But I have learned a lot while here and have met some great people."

"Probably not. When I started college, I did not know what I wanted to do with my life. JHU does not provide you with good opportunities to explore different fields; rather, it serves as a stepping stone for people who know precisely what they want to do as they proceed to grad school. I was just not focused enough to take best advantage of JHU."

"No. I'd choose a school of the same academic caliber, but with a larger undergraduate student body and more on-campus activities."

As you try to find the college or university best suited to you, the views of Johns Hopkins presented above may be helpful. Keep in mind that these students might have had similar positive or negative experiences had they attended a different university. At any college, it is important for the individual student to seek out challenging academic experiences and the best professors and to create a social life that best fits his or her personal style.

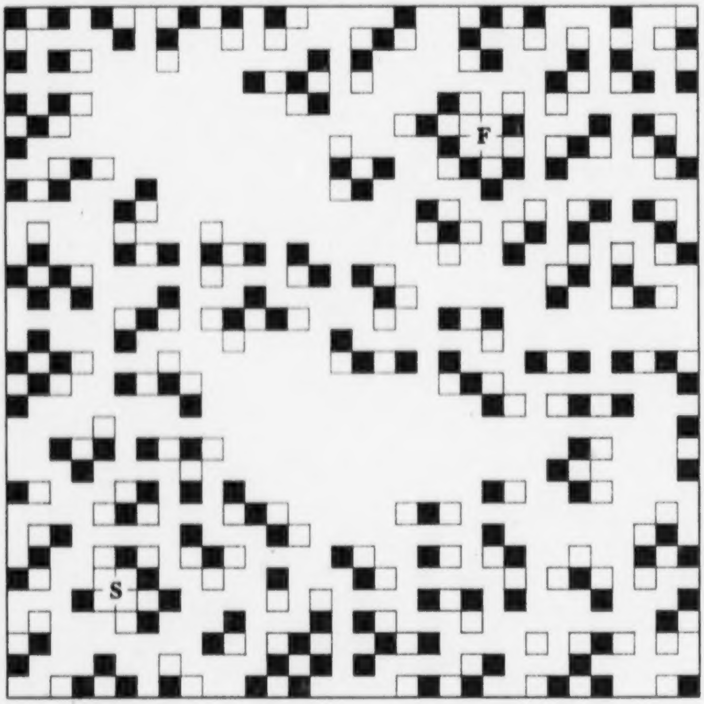
Note: *The students quoted in the College Review Series are expressing their own views, which are not necessarily those of JHU or CTY.* ■

CREATIVE MINDS

ImaGiNe...

Submit your creative work—poems, brain teasers, short stories/essays/book reviews. We look forward to hearing from you. Please write to Imagine • SET at CTY • The Johns Hopkins University • Baltimore, MD 21218

ANOTHER PUZZLE *by Tom Boester*



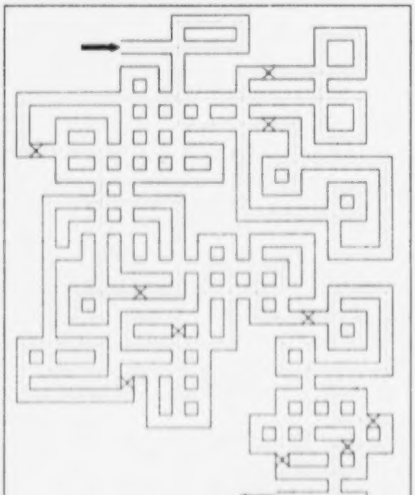
DIRECTIONS:

This puzzle is like an oversized chess board from which many of the squares have been removed. Moving like a chess knight, go from one of the four squares marked S to one of the four squares marked F. You can only land on squares that have not been removed. (You can jump over missing squares, but you can't land on them).

Fascinated by mazes and puzzles, **Tim Boester** is also intrigued by roller coaster design. Tim plans to study physics and math when he enters college next fall.

Solution to Puzzle in Nov./Dec. issue of *Imagine*:

This puzzle does not have a unique solution. You must go through the last seven Xs in the order shown; there is, however, more than one way to go through the first three Xs. The solution path crosses itself in many places; to follow it, go straight whenever the path crosses itself.



O CRT! *by Carl Takei*

O CRT!
Thou art so clear
and so fair.
Thou hast many Windows™ into thy soul.
And thou DOS shine beneath them.

O CRT!
Though thy radiation doth pain me
Mine eyes stay faithful
and do fry for thee.
'Tis fatal love,
For thee,
And thy cousin TV.

O CRT!
Thy angles so perfect
and orderly.
And in 6 million colors,
,how thy pixels do shine!

O CRT!
From the moment thou wast born,
Thine pixels
Were like crystals;
Thy transistors
Like so many beauteous sisters.

O CRT!
I shall never return thee!

O CRT!
Let me stroke thy exquisite NEC,
Caress thy rounded knobs,
My graphic fantasies fulfilled!

O CRT!
Let me reach inside,
and void thy warranty!

No?

Thou dost not want to turn me on?

O CRT!
Please, 'twill do no harm.
Still thou sayst no?!

Then, I shall . . .
I shall . . .
Shut you . . .

Off!

CLICK

Carl Takei is an 8th grader at Sutter Middle School in Sacramento, California, and was recently elected Sutter's student body vice-president. He enjoys roller-blading, writing, martial arts, computer programming, and twirling the knobs on his monitor. His poem is reprinted with permission from *Sacra Blue*, a magazine for computer users in the Sacramento area.

VOLUME 1 • NUMBER 4

Imagine...

Opportunities and Resources for Academically Talented Youth

Spotlight On

GETTING THE BEST PRECOLLEGE EDUCATION

March/April 1994

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As an academically talented student, you may find that a standard curriculum does not challenge you. If you frequently have to repeat—in one or more subjects—material that you've already mastered, the slow pace may leave you feeling bored and frustrated. Over time, your motivation and study skills may suffer, and you may end up ill-prepared for the academic challenge of a highly selective university.

Don't just sit back and wait for things to change [illegible] your own learning!

First, be sure you're fully aware—and are making good use—of all the options your own school does offer. Then, recognize that no one school or program can, or should be expected to, meet all your needs. You yourself can do much to supplement, accelerate, and enrich the basic school curriculum.

Recognizing that education occurs both within and outside school walls, you'll be able to take full advantage of the opportunities for learning that exist anywhere and everywhere. ■

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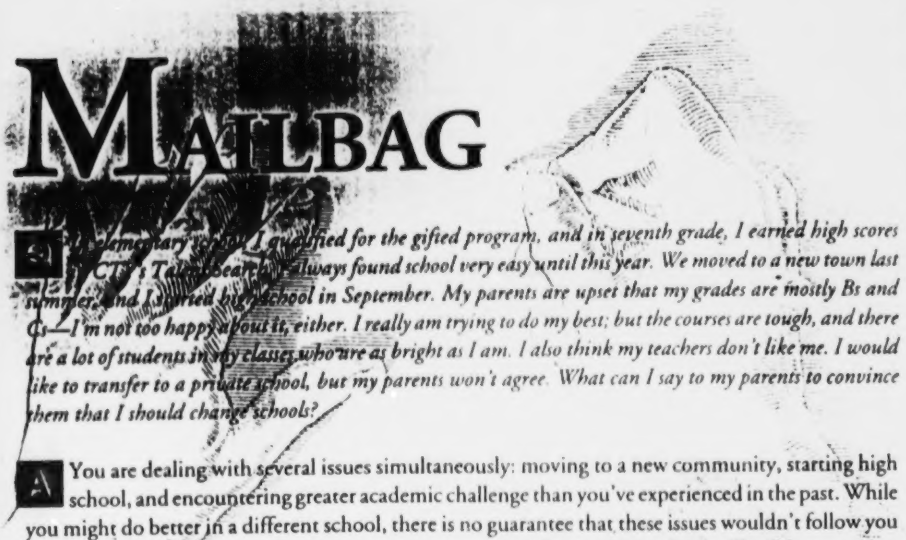
MAILBAG



Q *In elementary school, I qualified for the gifted program, and in seventh grade, I earned high scores in CTY's Talent Search. I always found school very easy until this year. We moved to a new town last summer, and I started high school in September. My parents are upset that my grades are mostly Bs and Cs—I'm not too happy about it, either. I really am trying to do my best; but the courses are tough, and there are a lot of students in my classes who are as bright as I am. I also think my teachers don't like me. I would like to transfer to a private school, but my parents won't agree. What can I say to my parents to convince them that I should change schools?*

A You are dealing with several issues simultaneously: moving to a new community, starting high school, and encountering greater academic challenge than you've experienced in the past. While you might do better in a different school, there is no guarantee that these issues wouldn't follow you there. Try to improve the situation at your current school first; private school will still be an option to investigate later.

Although it's too late to make course changes this year, consider whether or not you were placed in appropriate courses based on your record from junior high. If gaps in your background are contributing to your academic difficulties, perhaps a tutor could help you learn the missing subject matter.

Even though you think you're working hard, consider whether at least part of your problem derives from relatively poor study habits. Students who have always done well in school without ever having to exert themselves can find it difficult to adjust when they are suddenly confronted with more challenging material. Discuss your concerns with a guidance counselor and with your teachers. Try to evaluate what steps you can take to study more effectively, beginning with these tips:

- Keep a well-organized notebook.
- Take notes in class and on your reading assignments; review them often.
- Do extra reading, if necessary, to help you fully understand a subject.
- Start assignments well ahead of time, so that you're not rushed at the last minute.
- Organize study groups to share notes and discuss course material before tests.
- Ask your teachers for help, and/or hire a tutor.
- Participate in class discussions; you will learn more by being actively involved, and your teachers will get to know you better.

Consider also whether feeling strange in a new school is affecting your self-esteem and your ability to achieve. Join some school activities. Although such activities seem to reduce time for studying, they also force you to organize your time more effectively. And your increased involvement will help you make friends and feel more comfortable in your new school.

Developing good study habits is crucial at this point in your academic career *and* essential for your later success in college, where you will find even more difficult subject matter and even abler peers. You still may not earn all *A*s in very competitive environments; that may be an unrealistic expectation. But you will know you did your best, and you should accept that. (Be sure to read the article on "Keeping Your High Standards Under Control" in this issue on pages 12-13.) ■

Students and Parents:
Academically talented students may have educational, social, and emotional concerns that are different from those of their peers. If you have questions that you'd like to see addressed in this column or in a longer article, please write to Imagine, SET at CTY, The Johns Hopkins University, Baltimore, MD 21218.

If you haven't yet subscribed to *Imagine* but would like to receive your own copy, you'll want to take advantage of our introductory offer while it lasts. If you subscribe now, you will receive five issues at the discounted price of $25.00 per year.

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Imagine...
Opportunities and Resources for Academically Talented Youth

Volume 1 • Number 4
March/April 1994

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GETTING THE BEST PRECOLLEGE EDUCATION

What an academically talented student needs most from a high school is curricular flexibility coupled with a willingness to accommodate individual needs. Work with your school to design the best possible program for you, and supplement that program with learning experiences outside school.

IF YOU CAN CHOOSE YOUR HIGH SCHOOL...

Those of you who are in the fortunate position of being able to choose a high school from among several public and/or private options may benefit from these suggestions:

High schools with a larger proportion of academically talented students are likely to offer more courses and other opportunities geared to these students. You might inquire about the number of National Merit Semifinalists in a school. (Although a concentration of them may say more about the student population than about the curriculum, the fact that so many students are in need of advanced courses has probably influenced that school's course offerings.)

If possible, visit the schools you are considering during a regular school day. Talk with students and with the principal/guidance counselor. Look at a course list; ask about curricular flexibility. Find out what extracurricular activities are available.

Remember that your local public school offers certain advantages—you pay no tuition and live at home in your own community, where many other learning resources may be available to you. Other types of schools have their own strengths and may or may not require tuition payments.

Regional or local magnet schools. Some school systems have developed magnet schools as a vehicle for offering greater challenge to academically talented students.

State residential high schools for academically talented students. Specialized boarding schools in math and science and/or in the arts have been established in some states, including North Carolina, Illinois, Alabama, and Oklahoma.

Independent schools. A vast array of private day and boarding schools exists, with variations in admissions standards, educational philosophies, and curricular flexibility.

WHETHER OR NOT YOU CAN CHOOSE YOUR HIGH SCHOOL...

It's true that some high schools present more courses and opportunities than others. However, even if you can't choose where to enroll, bear in mind that a school's willingness to be flexible about course requirements and progression may be the most important factor in meeting your curricular requirements.

- TAKE FULL ADVANTAGE OF ALL THAT YOUR SCHOOL OFFERS.

Prepare yourself for college, and for life, by getting a firm background in all the liberal arts while you're still in high school.

In today's interdisciplinary world, a broad-based education is critical to success. A physicist must be able to write clearly. A social scientist needs to know statistics. And no matter which profession you choose, your ability to work with people from a variety of cultural backgrounds will be enhanced by a knowledge of history, geography, and languages.

So be sure that your class schedule encompasses not just those subjects that interest you most, but also a full range of courses in math, science, and the humanities, including foreign languages.

Take the most advanced courses available—especially in your areas of strength—including *honors*, *Advanced Placement* (AP), and/or *International Baccalaureate* (IB) options. These offer greater depth and challenge and are worth the extra effort; some may even earn you college credit. Carefully consider your qualifications for specific advanced courses, but don't avoid them simply because you might earn an occasional *B*. (See the articles on AP and IB programs in this issue.)

- SUPPLEMENT SCHOOL OFFERINGS WITH COURSEWORK OUTSIDE SCHOOL.

If the courses your high school offers are limited, you may be able to find what you want somewhere else. However, before you pursue one of these options, find out if your school grants credit for coursework taken elsewhere, or if they would allow you to test out of lower-level courses. If not, you may be better off choosing subjects for enrichment rather than those that would result in your having to repeat the same coursework later.

Correspondence courses may demand more time than you usually spend on homework for one subject, so you'll want to evaluate your academic and extracurricular schedule as you consider this option. Also, some correspondence courses require that you have a tutor or mentor to help you understand new concepts and/or to grade your work according to the guidelines of the sponsoring institution.*

**Imagine* will discuss correspondence courses in the next issue. For an overview of more than ten thousand possibilities, consult Peterson's *Independent Study Catalog*, available in libraries, bookstores, or from Peterson's, P.O. Box 2123, Princeton, NJ 08543-2123.

Part-time college study may be worthwhile if you have ready access to a college campus. If you have completed the high school curriculum in one or more areas, but are appropriately placed at your grade level in others, you may be given release time to spend part of your day at a local college. Or you could select evening classes.

Consider how you would feel about being in classes with older students. If you hope to transfer these credits later to your full-time college, be aware that not all schools accept such a transfer, although most will grant you placement in a higher-level course. Or you may choose to attend one that will accept credits.

Tuition reimbursement—through which some states or school districts pay for part-time college courses taken by high school students—is relatively new and not available everywhere. Check with your guidance counselor or with your State Director of Programs for the Gifted (if there is one).

Academic summer programs through regional talent searches or colleges and universities provide coursework acceleration and enrichment along with the stimulation of being with other academically talented students. (See *Imagine's* January/February '94 issue.)

Study Abroad programs offer both summer and academic year options. Under the sponsorship of a stateside university or other accredited organization, you get to travel to an area of the world you may never have seen before, immerse yourself in another culture, improve your foreign language skills, and take courses not available in your own high school.

■ PARTICIPATE IN EXTRACURRICULAR ACTIVITIES.

Use some of your time outside the classroom to gain content knowledge and develop skills not included in the school curriculum.

Academic competitions are available to students nationwide, and their number and variety are expanding. (See *Imagine's* September/October '93 issue.) Whether individual or team activities, academic competitions give you the chance to become more proficient in a field in which you already excel and to enjoy the camaraderie of others who share your interests. In addition, winners receive well-deserved recognition and sometimes even reap financial awards for their prowess.

Anyone who seeks to be well-educated can also benefit from involvement in extracurricular activities that fall outside the strictly academic realm. Set aside some time to pursue the *arts, athletics, leadership roles in organizations,* and *public service.*

■ SEEK MENTORSHIPS AND INTERNSHIPS.

In such relationships, students work independently with guidance from professionals who are knowledgeable in a particular field. A *mentor* might work with you on a correspondence curriculum, as mentioned above, or in a special area that interests you but is not readily accessible in other ways. In an *internship,* you might work in an office or laboratory on a specific project and may or may not be supervised by someone who acts as your mentor.

Both options would not only expand your content knowledge, but also help you experience the work world and get to know professionals who may become your role models.

■ USE LEISURE TIME WELL.

Along with structured activities, you probably already enjoy the intellectual stimulation of many worthwhile free-time pursuits. *Reading, writing, studying independently, visiting museums, attending cultural events, traveling with family,* and *socializing with friends* all make important contributions to any person's life.

When you create your own "Optimal Match" by making good use of the myriad resources available in your community, you'll guarantee yourself an excellent precollege education.

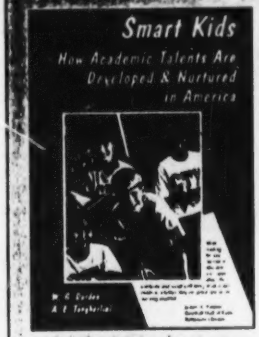
IF YOU'RE OUT OF OPTIONS… CONSIDER EARLY ENTRANCE TO COLLEGE

If you've made good use of all the resources discussed above but still find yourself running out of appropriate courses, you may want to explore the possibility of entering college early.

Many colleges are willing to grant acceptance to young high school students if they can demonstrate that they are intellectually and emotionally ready to attend college full-time. A few colleges offer special provisions for such students, but most treat early entrants just as they would any other freshman.

Academically talented students who choose to enter college a year or two early rarely encounter unusual adjustment problems—as long as they have given their choice careful thought and have the academic background necessary to succeed in college. More radical accelerants—students who enter college three, four, or even five years early—need to be more cautious about the wisdom of such a decision, especially if they choose a college that doesn't offer a supportive program for early entrants. ■

Imagine will feature a more detailed article on early entrance to college in a future issue. Meanwhile, students and parents seeking information are encouraged to read "Young College Students: Assessing Factors that Contribute to Success," by L.E. Brody and J.C. Stanley, in *The Academic Acceleration of Gifted Children,* (edited by W.T. Southern and E.D. Jones, Teachers College Press, New York, 1991).



Smart Kids

For further insight and additional strategies to use in acquiring your optimal precollege education, read the case studies of talented students presented in *Smart Kids: How Academic Talents Are Developed & Nurtured in America,* by W.G. Durden and A.E. Tangherlini.

Smart Kids examines the need to provide extraordinary young people with appropriate educations. "Educations," not "education," is the operative word: one of the book's main points is that talented students need to learn at a level and a pace that precisely suit them in each field of their endeavors.

The need for flexible academic pacing is first explored in the book's case studies—personal accounts of nine students' struggles to transcend limits initially imposed by their schools and to learn more, both inside and outside the classroom. Each student is faced with frustrations in his or her family, peer relationships, and scholastic experiences; and each student copes, and often triumphs, in different ways.

Smart Kids goes on to investigate schools, academic programs, and the work of particular administrators and teachers already committed to seeking appropriate educations for particularly talented students. Extraordinary teachers, flexibly-paced advanced academic programs, opportunities for acceleration, and legally mandated Individual Education Programs all contribute to the patchwork of possibilities sometimes available to help students achieve the "Optimal Match."

Although *Smart Kids* focuses on academically talented students, its message—that optimal learning is only achievable when schools embrace the unique needs of individual young people—applies to all students.

Smart Kids (published by Hogrefe & Huber, 300+ pp., $27.50), may be ordered from the Center for Talented Youth: CTY Publications and Resources, The Johns Hopkins University, Baltimore, MD 21218. (Add $3.50 for shipping and handling.) ■

INTERNATIONAL BACCALAUREATE

by Progna Choudhury

Having spoken very highly of the International Baccalaureate (IB) program in the past, I looked forward to writing an alumna's account for *Imagine* readers considering this option. Yet, finding fond memories to share was not easy; I remembered that the two years I spent in IB were perhaps the most difficult of my life. I often felt overwhelmed academically and sometimes felt lacking in social interaction. Despite all this, I would never change my decision to enter the IB program because I learned and grew so much, realized my potential, and developed the love of learning that motivates me today.

The negative aspects of my time in IB were peculiar to me, I think, rather than inherent in IB itself. In the middle of my junior year, my family moved from the heart of Baltimore City to a suburb of Washington, D.C., and I was forced to change schools. Suddenly, this city girl was thrown into the *'burbs,* into a magnet school where cliques had already formed, and into an intimidating academic program.

I worried that the other students had a head start: they had gone through the pre-IB curriculum for two years, so they *knew* what IB expected of them. For the first time in my life, I had to spend long hours on schoolwork, usually staying up until 11 pm, and was struggling to get the *A*s that used to come so easily. At first, I was determined to drop out of IB and transfer to my neighborhood school, but I soon realized I had to meet this challenge or be disappointed in myself. Luckily, I met three wonderful young women who had also just transferred and were in the same boat, and a support system grew.

Although other IB students didn't feel as overwhelmed as I first did, we all loved to complain about our lack of a social life due to inordinate amounts of work. Yes, I believe that the average IB student spent less time partying than did the average non-IB student, but we weren't inactive—many SGA officers, football stars, and lead members of the band and chorus were in IB. In the end, I think very few of us felt we had missed out on anything important during high school.

Overall, the IB curriculum probably made us the best-prepared-for-college students in the country. When I entered Johns Hopkins, I received a year's credit because of my scores on IB's final comprehensive exams. Compared with other college freshmen, IB alumni seemed to know how to study more efficiently, manage their time more effectively, and write more clearly. After all, we were well practiced at taking notes at warp speed, preparing voluminous research papers in almost every class (even math!), writing up lengthy labs, and taking exams that covered *everything.* We, who thought we had it rough in high school, actually felt less stressed by college.

At a deeper level, I am glad that I stuck with IB because I learned so much more. The IB curriculum itself was more advanced than many introductory college courses. We never read textbooks only—we read so many different books, participated in so many seminars, heard so many guest lectures that almost every topic was covered in depth.

We would sit in near awe as our history teacher cited names and dates and minute details from memory, describing the past as a story, bringing it to life. Our English teacher forced us to read and reread and discuss at length, so that we could look at any literary work from many angles in search of deeper meaning. I was amazed by how much our teachers knew and understood, by how committed they were to helping us grow intellectually.

My biggest qualm about IB was always its Euro-centrism: we read only Western writers ("world" literature meant Flaubert and Kafka) and studied only Western history (any mention of Asia or Africa was in the context of colonialism). To make up for this lack, I decided to write my History Internal Assessment (IA) on the division of India and Pakistan, a topic I knew nothing about. I learned how to use a university library and read myriad books and articles until I finally knew some history of my own cultural background. Every student presented his or her IA topic orally (we sometimes stayed after school for this), so—from our peers—we learned about everything from the Khmer Rouge to World War II artwork. Similarly, I chose to write my required Extended Essay comparing three Indian authors, which broadened my knowledge of literature. (The IA and Extended Essay were each required to be about twenty pages long.)

For our math project, some chose to work with fractals or chaos theory; but even then I was very interested in psychology. So I did a statistical project studying attitudes: I planned, carried out, analyzed, and wrote up my first psychological study before entering my senior year of high school.

Knowledge and experience are what one expects from a high school education, and IB delivered beyond my expectations. What I did not expect, and hadn't really gotten from my previous school, was the ability to think critically about my world. The Theory of Knowledge (TOK) requirement forced us to reevaluate the logic of our reasoning—to think about *how* we know what we know, *why* we believe what we do; to rethink what we had previously accepted as true without question; to consider what art is, what morality is. . . .

While TOK introduced us to thinking analytically, we were expected to practice this skill in every class. We were never spoon fed: IB's philosophy is that students should learn and discover on their own. Our teachers presented problems and asked questions, and we students discussed them until we came up with a solution. I now miss the willingness that IB students had to share their ideas and to learn from one another; even in college, I have not found as much questioning and in-depth analysis.

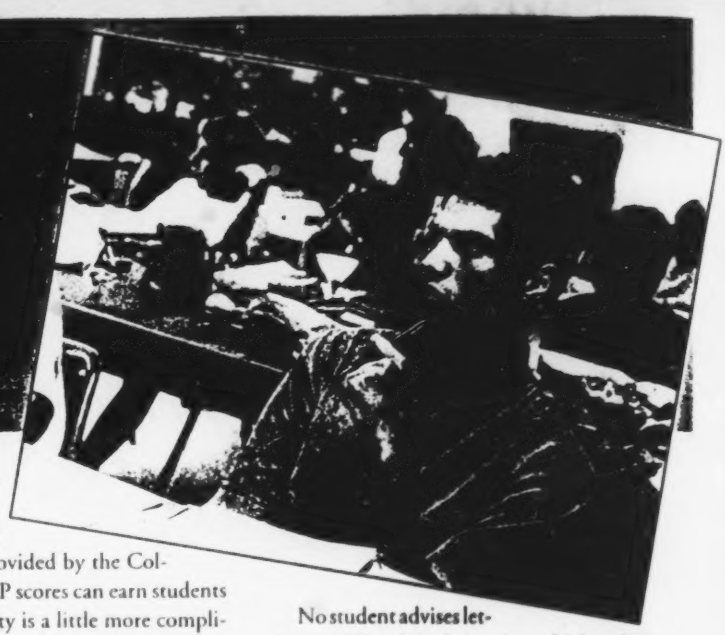
Of course, all is not perfect with IB. One or two of my friends felt burned out after the rigorous program and opted to take some time off before going on to college. Inevitably, everyone's experience with IB was different, but my experience was excellent—IB helped me open doors I hadn't known existed, instilled in me a love of learning and thinking, and placed me in an environment with brilliant instructors and interesting students without sheltering me from the outside world.

For all of us, the thrill of successfully completing IB—the sense of an ending and a beginning—electrified our graduation ceremony. For me, the IB diploma symbolized a difficult personal challenge well met. What a great feeling! ■

Now a senior majoring in psychology at The Johns Hopkins University, **Progna Choudhury** plans to pursue a Ph.D. in social psychology. She emigrated from Bangladesh at the age of six with her family and enjoys learning, teaching, and performing Indian classical dance and vocal music.

THE ADVANCED PLACEMENT PROGRAM:

To AP or Not AP?



What Does AP Mean?

After years of taking classes labelled G&T or TAG or GATE, you may think of AP as just another set of initials with which to adorn your transcript. But, although Advanced Placement classes resemble other kinds of gifted classes in their difficulty and selectivity, they do differ in one important respect: *AP classes can allow you to earn college credit as a high school student.*

The AP program, which is administered by the College Board and taught at local schools, currently includes sixteen courses in the sciences and humanities. The range of AP classes that your school may offer extends from calculus to the history of art, from English literature to computer science. All AP classes are taught at the college level, and you'll find that work is assigned and graded accordingly.

What Are AP Exams?

After spending a year doing college-level work, you may choose to be evaluated against college standards. Every May, the College Board administers the AP Exams, which consist of both multiple-choice and free-response questions. The multiple-choice sections can be scored by machine, but the free-response sections are read by teachers who are selected from across the country.

The College Board brings these teachers together every June and trains them in the standards of the AP. Two readers score each free-response answer; if the scores they assign differ significantly, a supervisor reads the answer again. This process ensures that the score you receive is fair and is consistent with all the other scores assigned for the exam.

What about College Credit?

AP Exam scores are important, because they determine whether the college you enter later will consider giving you credit for your work. AP scores range from *1 (no recommendation)* to *5 (extremely well qualified).* Policies vary, but most colleges consider an AP score of at least a *3* equal to a satisfactory grade in a comparable college course.

That equivalence, however, means different things at different colleges. Pamphlets provided by the College Board stress that AP scores can earn students college credit; the reality is a little more complicated. While most colleges do recognize AP scores, their policies vary with respect to their use.

If you score a 5 on the American history exam, for example, you may find that one college will allow you to skip into an advanced history seminar. Another college may grant you three credits for that score, and those credits may fulfill some of your distribution requirements. And if you also scored well in calculus, chemistry, and English literature, you may find that a third college will allow you to graduate in three years. This variety of options is simply too broad to be summed up in the phrase "college credit for high school work."

To find out how AP credits work in practice, we surveyed students who had taken AP classes before going on to highly selective colleges. They told us what they had learned and how they had decided to use their exam scores. Their advice below is useful for students who want to get the best possible education in high school—and in college.

Planning Ahead

Because colleges have different policies about AP scores, it's essential to do some preliminary research. One student advises, "Be sure to look into each school well ahead of time, i.e., start thinking about it junior year."

When you are considering colleges, find out what scores they require on each exam and what kind of credit or placement they give. While the answers to these questions may influence your college choices, you probably shouldn't make them the deciding factor. One student warns:

> *Students shouldn't make a decision about a college based on its AP credit-granting system. A tougher AP system means a tougher school, and if you have to retake some basic classes or core requirements, maybe you'll actually be taking better advantage of what the school has to offer.*

No student advises letting an AP policy determine which college you attend, but a few advise letting it determine which AP Exams you take. Each AP Exam costs $71, although fee reductions are available for students with financial need and some school districts foot the bill. One student felt that $71 was too much to pay for a test that didn't translate into any useful credit:

> *I wasted time and money taking the AP Exams, because I don't really want to graduate in three years* [the only AP option available at her college]; *I want to be an undergrad for four years.*

On the other hand, the price of an AP Exam is still much lower than the price of a college course. In 1994, a single college course may cost as much as $2,500. Given the huge savings that are possible, it probably makes sense to hedge your bets by taking as many AP Exams as you can.

And even when an AP score won't translate into credit you can use, it can still help you in other ways—by impressing admissions officers or convincing professors to let you take more advanced courses.

Challenging Option

While a few of the students we surveyed questioned the value of taking AP *Exams*, not one of them questioned the value of taking AP *courses*. After discussing credit options, one student pointed out:

> *The main reason for taking an AP class should be that you are looking for a more interesting class and a more challenging environment in which to learn.*

Another student emphasized that it was the other students, as much as the more rigorous cur-riculum, that made her AP classes so rewarding:

In 1994, AP Exams were given in the following subjects: Studio Art (Drawing Portfolio and General Portfolio); Biology; Calculus (AB and BC); Chemistry; Computer Science (A and AB); Economics (Macroeconomics and Microeconomics); English (Language & Composition and Literature & Composition); European History; French (Language and Literature); German Language; Government & Politics (Comparative and United States); History of Art; Latin (Vergil and Latin Literature); Music Theory; Physics (B and C); Psychology; Spanish (Language and Literature); and United States History.

> *I preferred the more challenging and therefore more intellectually stimulating and rewarding AP classes to the easier regular-track courses. I liked the atmosphere of the AP classes because, as in college, people were there because they wanted to be there, not because they had to take the course to graduate.*

For students who have already exhausted their high school curricula, AP courses provide an alternative to entering college early. As one student explained:

> *I took the AP courses because I was ready to take them, and it just made sense. Otherwise, I would either have had to go to college early (which I didn't want to do) or be bored to tears in high school.*

Indication of College Readiness

The benefits of AP coursework extend into college. Many students have discovered that, aside from the concrete advantage of earning college credit, less tangible effects exist as well. Some believe that the AP courses they took, and AP scores they received, influenced college admissions officers who read their applications:

> *Think about it: if you are applying to study at a college, and you show them that you have already taken a lot of college-level courses and have done well in them, the admissions people have reason to put faith in your ability to do well at college.*

Doing well on an AP Exam is obviously impressive, but even attempting the most challenging courses available at your school is enough to draw the attention of most admissions officers. So you shouldn't let fear of a low score deter you from taking an AP Exam or an AP class.

Even students attending colleges that don't recognize AP scores often consider their AP background to be invaluable. One student at Caltech, where AP credit is not granted, found that he had still benefited from his AP courses:

> *The APs do provide some advance preparation for college courses. Further, Caltech has its own placement tests for some of its courses. The AP Exams may make good preparation for these.*

College Placement

Students who do attend schools that recognize AP scores often find that they are able to place out of introductory courses. One student found, at her college, that:

> [AP credits] *allow you to go straight into upper-level classes, and that is definitely a bonus, because many intro-level courses are large and tedious.*

Most students are thankful to have the chance, in their first year of college, to take more interesting, advanced classes. But others warn against doing so without careful thought:

> *I would caution against blindly letting an AP score be your basis for enrolling in a higher course. Often the AP is NOT equivalent to a college course. You only need 60% of the points on an AP exam to get the highest score, and I assure you that 60% of the credit in a Harvard course will not earn you an A.*

The wisest plan may be to place out of courses *selectively*. One Yale student decided to skip all of the courses she had placed out of, except one that had a reputation for being especially well-taught.

College Credit

Many colleges award actual credit for AP scores. This credit may be used in a variety of ways: to fulfill distribution requirements, to waive required courses, and sometimes to lessen the number of courses required for graduation. One student found that:

> *My AP credits allowed me to skip two core courses (which was great!) and thus allowed me two more electives which I was glad to get!*

All the students who earned college credit for their AP scores appreciated the flexibility and range of choices that this policy allowed them.

Early Graduation

Some colleges allow students to use AP credits *only if* they have enough to place out of a full year's curriculum and plan to graduate in three years. For students who already know what they want to study, and for students who face long years in graduate and professional school, skipping a year of college can be a good idea. And the financial savings can be enormous.

None of the students we surveyed chose to graduate early, however, and many advised against it:

> *I would generally recommend staying in college for four years unless you find yourself totally unstimulated—in which case, you're probably at the wrong school or in the wrong major.*

Instead of moving too quickly through college, these students decided to spend their fourth year taking even more challenging classes:

> *My AP credits essentially allowed me to do more college level work than I could otherwise have fit into four years.*

Other students felt that they needed all four years of college to reach their full intellectual and emotional maturity.

If Your School Doesn't Offer AP Courses

About half of all high schools offer some AP classes. If yours doesn't, you may be able to take AP courses at another high school nearby. Or you could try finding teachers who'd be willing to teach the courses that interest you. The College Board will provide them with sample curricula and test information.

If your school can't accomodate your interest, consider working with a mentor to learn the material, then take the AP Exam on your own:

> *I took Calculus BC by mail from the Duke TIP program. The syllabus and supplementary material were both excellent. It's a good way for someone who has no other access to AP courses to learn the material.*

If any of these options seem feasible, you should explore them further. A Princeton student may have been joking when he said that AP courses have helped him "impress people at cocktail parties," but the other benefits of the AP program are real. AP courses and AP scores can help you make your high school and college years as challenging and rewarding as they can be. ■

For free copies of the pamphlets *A guide to the Advanced Placement Program* and *AP Bulletin for Students and Parents*, write to Advanced Placement Program, P.O. Box 6670, Princeton, New Jersey, 08541-6670.

To find the college with the AP policy that best meets your needs—or the colleges that fall within a certain price range or offer a certain major—consider using the College Board's *College Explorer*. Updated annually, this software includes information about 2,900 different colleges and allows you to conduct searches of 600 options including AP policies, majors, location, admission rate, academic programs, student life features, and more. The software comes in both 3-1/2 and 5-1/4 formats and can be used on either the Apple II family or MS-DOS.

If your family or school is interested in buying this software package ($125), or if you want more information about the AP program, write to Advanced Placement Program, P.O. Box 6670, Princeton, New Jersey 08541-6670.

***Imagine* staff members attended this year's public exhibition of Westinghouse Science Talent Search projects—held March 12 and 13 at the National Academy of Sciences in Washington, DC—and interviewed some of the finalists who were presenting their projects.**

THE 1994 WESTINGHOUSE SCIENCE TALENT SEARCH

Alexis Martin

Darius D. Hollings

"An Investigation of Trees in Lattices," "A New Early Irvingtonian Vertebrate Fauna from Furnas County, Nebraska," "Effect of Winglets on Drag of Aircraft Wings." Sound intriguing? These are only three of the topics explored in this year's top forty Westinghouse science projects.

The Westinghouse Science Talent Search, administered by Science Service in partnership with the Westinghouse Corporation, was first held in 1942. Since then, members of its annual crop of forty finalists have gone on to forge some of the most creative and illustrious careers in modern science. Former finalists have won five Nobel Prizes, two Fields Medals in mathematics, and nine MacArthur Fellowships.

Cutting-Edge Science Projects

Whether selected as finalists or not, the 1,645 high school students who submitted independent projects in this year's Science Talent Search gained first-hand experience in scientific research. In fact, many launched themselves into sophisticated experimentation they might not otherwise have embarked on until they found themselves in graduate school several years later.

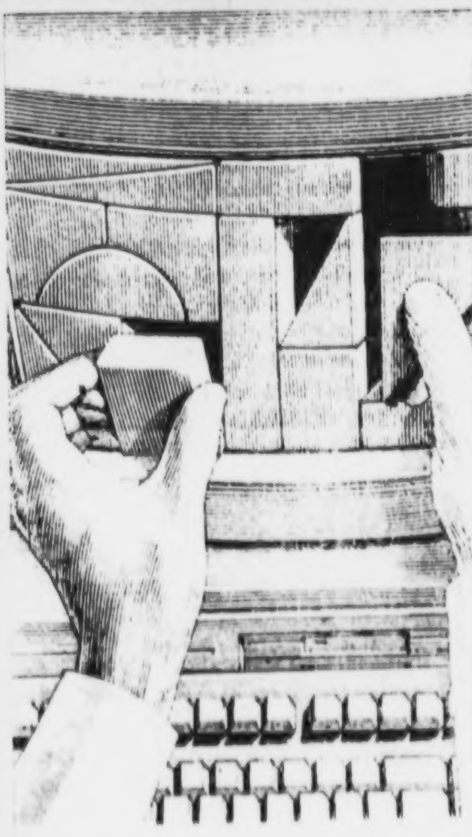
The caliber of the Science Talent Search projects can be so high that contestants are sometimes working on the cutting edge of science. With the valuable guidance of mentors, students can find themselves exploring questions to which no one knows the answers. **Alexis Martin,** a finalist from La Guardia High School of Music and Art in New York City, based her work on her mentors' research, which had identified precursor cells capable of generating new neurons in the brains of adult songbirds. Alexis participated in a successful search for similar cells in the brain tissue of rats and humans.

While Alexis jumped onto a larger project that was already conceptualized and underway, other contestants designed their own experiments, which were marked by personal interests and concerns. This year, several projects focused on the environment:

Catherine Huang, a finalist from Tower Hill School, Delaware, did not intend to enter the Science Talent Search when she started to investigate the use of ultrasound as an agent in the detoxification of waste water; her motivation came from her dedication to environmental causes. Securing mentors and laboratory access at nearby universities, Catherine eventually demonstrated that sonochemical oxidation has the potential to serve as an effective process for detoxifying hazardous chemicals.

Janos Zahajszky, of Canton High School in Canton, Massachusetts, was awarded seventh place for another project grounded in concerns about water and aquatic ecosystems. When the Exxon *Valdez* dumped much of its oil cargo near the shores of Alaska, Janos was in the eighth grade and was already studying the physical properties of oil and water. The disaster both disturbed him and captured his imagination; by the ninth grade, he was studying oil spills. Janos analyzed brine shrimp to show that the dispersants currently used to treat oil spills make the oil more toxic to marine microorganisms.

Other projects reflected future directions in industrial technology: **Darius D. Hollings,** of Cass Technical High School, Detroit, investigated a new family of ceramics that might eventually be used in automobile engines. Although he is off to study medicine and chemistry at Morehouse College in the fall, he hopes to continue lab work synthesizing ceramics in the summers. Darius became interested in science when, as a young boy, he competed with his grandmother to see who could produce the biggest vegetables in their garden. When Darius pumped growth hormone into the soil on his patch, botany and



ABILITY GROUPING AND COOPERATIVE LEARNING

A Review of the Debate

> "Last year I was placed in an honors English class. I did intensive reading in Greek mythology and wrote papers analyzing my readings. This year the honors program was eliminated. Now, in my regular English class, I am studying language skills that I mastered years ago. I have to do drills and homework on material that I already understand. And the reading assignments don't challenge me."

Sound familiar? Academic options are being streamlined and reduced in many schools. Classes of particular benefit to academically talented students have been frequent targets of that streamlining. Why are educators cutting back on these learning alternatives?

The reduction of honors classes and other options typically enjoyed by talented students is in part a consequence of a debate among educators over two classroom techniques: *ability grouping* and *cooperative learning*. Classes in which students are grouped according to ability and achievement levels are being replaced by mixed classes emphasizing cooperative learning techniques.

What Is Ability Grouping?

Utilized in American schools for more than seventy years, ability grouping refers to many strategies designed to bring together students of similar ability or achievement. Ability grouping makes it easier for a teacher to tailor curricula to the readiness and skills of the students. The benefits of ability grouping result from the students' access to appropriately advanced curricula, not from the group divisions per se.

Ability grouping includes both short-term provisions, such as small groups of students working together for one class period on a limited set of mathematics problems, and more permanent arrangements, such as year-long classes for designated students in a particular subject.

Ability grouping is sometimes associated with "*tracking*," which places students in semi-permanent interdisciplinary learning tracks according to their assessed abilities. But most proponents of ability grouping endorse a more flexible and localized process, characterized by frequent assessment in particular curricular areas and frequent opportunities for change.

What Is Cooperative Learning?

Cooperative learning typically brings students of different ability and achievement levels together and, much like team sports, requires them to meet particular goals as a group. Individual students do not compete against fellow members of their group, but instead see their achievement as interrelated to the performance of the group as a whole. According to proponents, cooperative learning should incorporate both individual accountability and shared group goals in order to be effective.

Cooperative learning can be employed when students have already been grouped by ability or achievement, effectively combining the two techniques. But in this analysis we focus on cooperative learning for students of mixed ability or achievement, since it is this type that is playing an increasingly prominent role in schools.

Why the Debate?

Ability grouping and cooperative learning can and—most educators believe—should function together as compatible aspects of academic programs. However, perhaps because the proponents of each technique have tended to express concerns about the other, these two learning strategies are often viewed as opposing sides in a debate.

Positive effects for both ability grouping and cooperative learning have been asserted by educators and supported by research.[1] However, the effectiveness of cooperative learning *specifically for talented students* has not been well studied. Despite this gap, many schools have taken a favorable attitude towards cooperative learning, substituting a broad cooperative environment for the ability grouping options formerly available.

This move towards cooperative learning and away from ability grouping has been partially inspired by current political attitudes and thinking. Perspectives on these two learning techniques reflect beliefs about our culture as a whole, our ideas of excellence, and our attitudes about how people should interrelate.

For example, ability grouping has been criticized by those who believe that schools should strive always to operate in inclusive ways in order to promote a less exclusive society. Such thinkers are disturbed by what they perceive to be the implicitly exclusive function of ability grouping, which separates students according to "differences."

It is important to remember, however, that there are many different types of ability grouping, some of which separate students only on a temporary basis and according to their particular academic strengths.

Finally, the move towards cooperative learning and away from ability grouping has been energized by economic cutbacks within school districts. Schools that have embraced cooperative learning have been able to eliminate academic options and justify the reductions as an integral part of a new learning technique. But even key proponents of cooperative learning—such as Professor Robert E. Slavin of The Johns Hopkins University—have spoken out against the broad dismantling of ability grouping programs.[2]

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[1] For example, see Carol J. Mills and William G. Durden (The Johns Hopkins University), "Cooperative Learning and Ability Grouping: An Issue of Choice," *Gifted Child Quarterly*, 36 (Winter 1992): 11-16.

[2] See Slavin/Robinson debate in "Point-Counterpoint," *Journal for the Education of the Gifted*, 14 (Fall 1990): 3-36.

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chemistry came together, and he was hooked on scientific experimentation.

Like Darius, most of the Science Talent Search finalists profess a broad and passionate love of scientific inquiry, and all we talked to plan careers in science. Nevertheless, many spoke of diverse interests and academic pursuits. Alexis Martin, for example, is a flute, piccolo, and voice major at a magnet high school for the arts. Alexis had to study AP Biology on her own because it was not available in her high school's science program. She then sought out the professional relationships and access to laboratories necessary to pursue an independent project. The initiative and resolve Alexis showed in securing the preparation and opportunities she needed are also qualities that were essential in her successful experimentation.

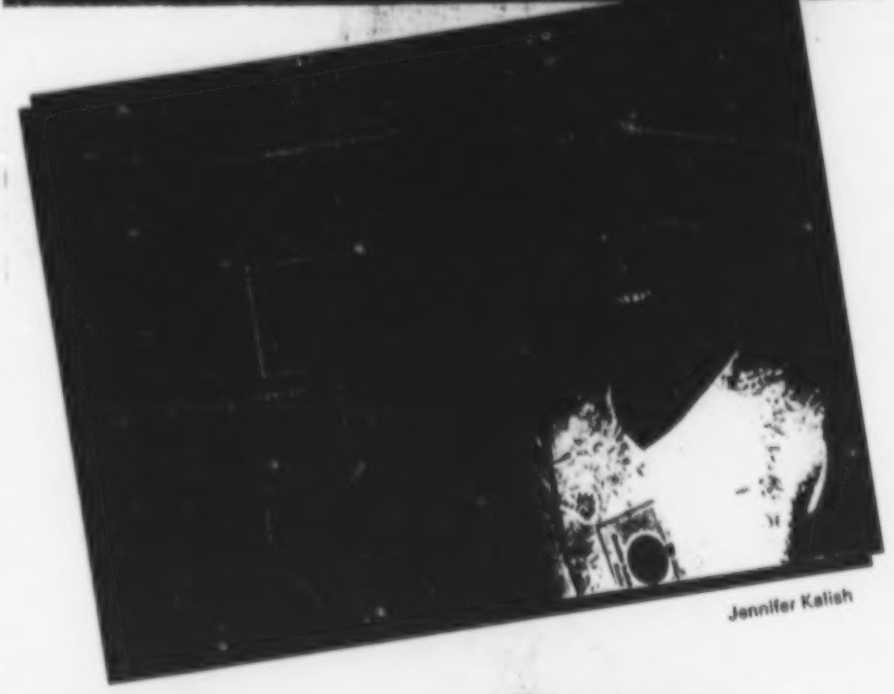
Westinghouse Competition's Positive Influence

The Westinghouse Science Talent Search addresses what many see as a grave inadequacy in most science programs in secondary schools today: an abstract, textbook approach to scientific learning. This annual competition not only motivates ambitious high school students to engage in real-life research, but also inspires a greater interest in and commitment to scientific experimentation in high schools across the United States. The increasing geographic diversity of finalists—who came this year from 31 cities in 21 states—provides encouraging evidence that an important message is being disseminated:

With the right preparation and support, high school students are ready for—and greatly benefit from—adult research opportunities. And whether or not they enter science contests, all students benefit from their schools' increased emphasis on research, where the study of science is brought to life by practical application. ■

For further information on the Westinghouse Science Talent Search, write to Science Service, 1719 N Street, NW, Washington, DC 20036; or call (202) 785-2255.

Profile of a Science Pioneer: Jennifer Kalish



Jennifer Kalish

The 1994 eighth-place Westinghouse winner, Jennifer Kalish, spoke to us at length about the challenges she encountered conducting her project, "A Molecular Genetic Approach to Understanding Aluminum Toxicity in Eukaryotes."

Studying the effect of aluminum on yeast cells, Jennifer found that aluminum inhibits cell growth even in the absence of oxygen. She also generated two types of yeast that are aluminum resistant. Her research may be useful in understanding the development of Parkinson's disease, Lou Gehrig's disease, and Aluminum Bone Disease, in which aluminum is thought to replace some of the calcium in the bone.

Jennifer's project was born of an independent study she designed herself. One day in her school cafeteria, Jennifer opened up a juice box and noticed its aluminum lining. She wondered how much of the aluminum was seeping into the juice and what effect, if any, this had on the human body.

Intrigued by these questions, Jennifer approached and started working at a Johns Hopkins University toxicology lab that was exploring and identifying genes involved in protecting cells against metal toxicity and oxygen toxicity. Having generated several aluminum-resistant strains of yeast, Jennifer found that these strains were not resistant to other heavy metals, indicating that their aluminum resistance had its own characteristics. Still working on isolating and identifying genes that confer aluminum resistance, Jennifer hopes to learn more about the cellular mechanisms involved in aluminum toxicity and resistance to it.

According to Jennifer, the most difficult stage of her project was the three months that she spent looking for a topic to investigate. Her advice to students who want to embark on their own projects? "Talk to anyone and everyone. You never know where the opportunities will come from. . . . In science you have to follow your curiosity. I wasn't extremely interested in this at first, but my curiosity and unanswered questions took over." ■

This fall, Jennifer will begin her freshman year at Harvard College.

The Importance of Ability Grouping for Talented Students

When ability grouping is cut or diminished within a school's program, making it more difficult for teachers to facilitate different learning experiences for different students, all students—and particularly talented students—are deprived of a crucial educational approach. As one mother put it:

> *The current philosophy of our school district is not to group by ability. All children are given the same work. Bright children can do extra "enrichment" work if they want. This policy is very frustrating. I feel the everyday work should fit the child's ability. Why should one child have to do extra work to be challenged, when other children are done and ready to go out to play?*

The image of a young, intellectually talented child sitting and doing busy-work that does him no particular good illustrates the frustration of students who need the differentiated work made possible by ability grouping, but who cannot obtain it in their schools. Like the extraordinary tennis player and the committed musician, the student with intellectual gifts needs stimulation and challenge. Ability grouping can provide the highly able student with greater liberty to explore the subjects that she loves and to advance more efficiently as she explores.

Proponents of cooperative learning maintain that the *"peer tutoring"* or *"partner teaching"* in which talented students typically engage in the cooperative model is also intellectually beneficial to the talented student, since it has been demonstrated that teaching effectively instills material in the mind of the teacher. But it is unclear how many times the talented student can teach something that he or she already understands before such teaching becomes mere repetition.

[illegible] Cooperative Learning, [illegible] Students

Proponents of cooperative learning assert that talented students, as well as others, benefit from the social opportunities implicit in cooperative learning.

The frequently expressed belief that talented students need the social exchanges that are central to cooperative learning is sometimes based on the assumption that talented students are socially underdeveloped and need a prescribed type of social interaction in order to develop normal social skills. While all students benefit from regular, positive social interaction, there is no evidence to support theories of social maladjustment in talented youth; to the contrary, talented students are just as likely to be socially well-adjusted as other students are. Schools can contribute to the adjustment of talented students by validating and meeting their needs for flexibly paced academic programs and a variety of classroom techniques.

Furthermore, the social benefits accrue differently for talented students because cooperative learning does not offer the same social experience to all students. In the cooperative learning model, talented students usually assume a particular role and, simultaneously, a relatively high degree of responsibility for the success of the cooperative model: as peer tutors, they are responsible for teaching less advanced members of the group. Cooperative learning therefore demands highly sophisticated social skills from talented students, who are expected to facilitate the cooperative project without alienating their peers.

The Need for Balance

It is important to remember that current research generally supports the implementation of both ability grouping and cooperative learning. Providing students with a balanced set of learning options will allow them to emphasize the strategies that work best for them. Ability grouping should be maintained for its demonstrated value to all students—and particularly to students with unusual talents.

As Professor Ann Robinson of the University of Arkansas[5] has pointed out, time is limited in the classroom. The student who is explaining a geometric axiom for the third time is not moving ahead to learn a new axiom. Furthermore, such a student's teacher may hold him back from options such as acceleration for which he is eligible, so he can facilitate the cooperative learning process for other students. This outcome is particularly likely within the climate of a school that manifests a strong preference for cooperative learning at the expense of other techniques. ■

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[5] Slavin/Robinson debate, *ibid.*

WHAT DOES THE RESEARCH SAY?

Effects of Ability Grouping for Talented Students

In a broad study synthesizing current research, Dr. Karen B. Rogers of the University of St. Thomas (St. Paul, Minnesota) found that most forms of ability grouping result in substantial academic gains for talented students. On the basis of her study, Dr. Rogers formulated the following guidelines for educators:

1. **Students with intellectual or academic talents should spend the majority of their school day with others of similar abilities and interests.**
2. **Clustering of talented students within a mixed classroom can be considered where programs for the talented do not exist.**
3. **Group instruction across grade levels according to students' level of mastery can supplement or replace clustering where programs for the talented do not exist.**
4. **Various forms of acceleration should be offered to talented students.**
5. **Various forms of enrichment that extend the school curriculum should be provided to talented students.**
6. **Mixed-ability cooperative learning should be sparingly incorporated into the education of talented students. Until there is evidence that cooperative learning provides academic outcomes similar or superior to those achieved through ability grouping, the grouping practices that are supported by research should be continued.** ■

Dr. Rogers' study, "The Relationship of Grouping Practices to the Education of the Gifted and Talented Learner," is available from the Dissemination Coordinator, National Research Center on the Gifted and Talented, The University of Connecticut, 362 Fairfield Road, U-7, Storrs, CT 06269-2007; ($2.00 for the executive summary or $12.00 for the full-length paper).

Further information on this topic will appear in *Ability Grouping and Cooperative Learning*, currently in press for release in April. Order from Publications and Resources, Center for Talented Youth, The Johns Hopkins University, Baltimore, MD 21218; ($13.00 plus $3.50 for shipping and handling.)

PARENTS AND STUDENTS SPEAK OUT ON ABILITY GROUPING

Imagine solicited comments on ability grouping from the Talented & Gifted Education computer bulletin board.* Here's a sampling of parent and student responses:

"The fact of the matter is that children are grouped in school. The argument is between methods of grouping.

If you don't group by ability, then how are the students grouped? Typically, they are grouped by age. If anyone argues against ability grouping, then I'd like them to explain how grouping by age is more beneficial than grouping by ability. Isn't school an academic undertaking?

My five-year-old can add, subtract, multiply, divide, and write in complete sentences. When I send him to school to learn, shouldn't I expect him to be grouped with others of his ability so he can learn? Or should he be grouped with other students who happen to be five years old? School is really one of the few places where 'peer' means 'age.'

From personal experience, we were forced to pull my son out of school and place him into a private school. In the public school, he was grouped with students his age; in the private school, he is grouped with his peers. After three months in the local public school, he didn't know the name of a single child in his class. After four weeks with his peers, he knew the names of all his fellow classmates.

Ability grouping has helped my son academically, socially, and emotionally. Age-grouping did cause harm in all these areas."

—Parent, Minnesota

"My daughter excelled and was doing extremely well in ability groupings until the reading teacher decided that it was too difficult to manage four reading groups in a class and that two would be adequate. My daughter was slowed down to such an extent that total boredom set in when she reached fifth grade."

—Parent, Washington, D.C.

"I agree with the line of thought that kids should be grouped by age—mental age, that is. I myself have almost fallen asleep in some classes, particularly writing. I'm not exactly sure where the system picked up age grouping . . . In my personal experience (I'm in the fifth grade now), I've found that ability grouping is the best choice. If the system wants to put more learning into school, go with ability grouping."

—Student, Missouri

"I am extremely bitter toward the public school system for abandoning ability grouping. It was only through ability grouping that my daughter was able to feel that she wasn't alone in the way she thought or felt; she was also stimulated to excel in an environment that didn't make her feel like a nerd."

—Parent, Indiana

"When I want socialization, I'll put my kids in the scouts. In school, I'm looking for education.

When I send my child to math class, I expect him to learn math. He can add, subtract, multiply, and divide already. Is he going to learn math if he's stuck in a classroom of five-year-olds (no age diversity) who are learning how to count? Doesn't he have the same rights as all the other children around, that is, to learn math?"

—Parent, Minnesota

"From experience, I know that my son socializes better when he is with people of his own intellectual level, no matter what age they are. Most, if not all, of his friends are also in the "highly gifted" category; but when they get together, they behave (or misbehave) as other children do. They are not sitting around discussing nuclear physics, rocket science, or higher math—but they are able to "play" and be themselves when among their intellectual equals.

This does not happen when they are with people who are their peers in chronological age alone. They are different; their conversations are often more adult than those conducted with kids who are only similar in age; their senses of humor tend to be more sophisticated. My point is that these children are able to relax around similar children, and this doesn't appear to happen in general. My son and his friends have all experienced higher than average shares of social problems, teasing, and fighting at school. They are fine when grouped together."

—Parent, California

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*To subscribe to the Talented & Gifted Education bulletin board through Bitnet or Internet, type in: **Mail to listserv at NDSUVM1,** then type the message: **Subscribe TAG-L *your name*.**

BOOK REVIEW—

Continued from [illegible]

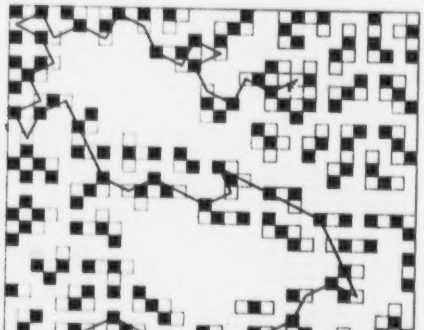
And so he performs. He works and sweats and loses sleep, suffers rejection and isolation, and finally knows the simultaneous triumph and loneliness of being the best. Inevitably comes the ultimate graduation exam: Ender's Game, the last great gamble, for the highest possible stakes.

For any fiction lover, *Ender's Game* is very nearly an entirely new genre: an adventure story with characters who really *live,* woven with moral dimensions and tensions. At the story's culmination, the reader is left exhausted, uplifted, and even a little wiser.

Card has a gift for writing superbly readable prose, a unique insight into the human soul, and a knack for setting down hard-hitting ethical questions that demand to be answered individually by each person. This combination, unequaled by nearly any contemporary writer, blends into what is sure to become a modern classic. I highly recommend *Ender's Game* to anyone who can appreciate what a gift and a burden it is to have a great talent; what it means to do a deed knowing that, while the act is unbearably wrong, *not* to do it is worse; and what it is to be fully human. Or simply to be alive. ■

Solution to Puzzle in Jan./Feb. issue of *Imagine:*

This puzzle does not have a unique solution. All solutions follow this "S"-shaped path; however, there are several ways to execute the bottom and diagonal segments of the path.



THE COACH'S CORNER

by Chengde Feng

Here are the solutions to "The Coach's Corner" problems printed in the Jan./Feb. issue. More problems by Mr. Feng will appear in future issues of *Imagine.*

1. The following table shows the process of weighing the beads.

First Weigh		Second Weigh	
Result	Conclusion	Result	Conclusion
$W_1+B_1=W_2+G$	$B_1 \neq G$	$B_1>G$	$B_1=P, B_2=Q, W_1=Q, W_2=P, G=Q$
		$B_1<G$	$B_1=Q, B_2=P, W_1=P, W_2=Q, G=P$
$W_1+B_1>W_2+G$	$W_1=P$	$B_2>G$	$B_1=Q, B_2=P, W_1=P, W_2=Q, G=Q$
	$W_2=Q$	$B_2=G$	$B_1=P, B_2=Q, W_1=P, W_2=Q, G=Q$
	$B_1 \geq G$	$B_2<G$	$B_1=P, B_2=Q, W_1=P, W_2=Q, G=P$
$W_1+B_1<W_2+G$	$W_1=Q$	$B_2>G$	$B_1=Q, B_2=P, W_1=Q, W_2=P, G=Q$
	$W_2=P$	$B_2=G$	$B_1=Q, B_2=P, W_1=Q, W_2=P, G=P$
	$B_1 \leq G$	$B_2<G$	$B_1=P, B_2=Q, W_1=Q, W_2=P, G=P$

2. $\Leftrightarrow 1994y-1994x=xy$

$\Leftrightarrow 1994y=x(1994+y)$

$$\Leftrightarrow x=\frac{1994y}{1994+y}=\frac{1994(1994+y)-1994^2}{1994+y}=1994-\frac{1994^2}{1994+y}=1994-\frac{1994}{1+\frac{y}{1994}}$$

$(0<x<1994) \Rightarrow 1+\frac{y}{1994}=2, 997, \text{ or } 1994$

$\Rightarrow \frac{y}{1994}=1, 996, \text{ or } 1993$

$\Rightarrow y=1994, 996\times1994, \text{ or } 1993\times1994$

$\Rightarrow x=997, 1992, \text{ or } 1993$

Thus, (997, 1994), (1992, 1986024), and (1993, 3974042) are all the pairs of positive integers that satisfy the equation.

3. It is easy to find that the sum of the digits of N is a multiple of nine.

Let $N=\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_21}\times9$.

$$P=\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_21}\times\underbrace{999\ldots\ldots99}_{1994\text{ nines}}=\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_21}\times(10^{1994}-1)$$

$$=(\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_21\underbrace{000\ldots\ldots00}_{1994\text{ zeros}}}-1)-(\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_21}-1)$$

$$=\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_20\underbrace{999\ldots\ldots99}_{1994\text{ nines}}}-\overline{a_{188}a_{187}a_{186}\cdots\cdots a_3a_20}$$

Observing the special form of the minuend in the last expression of subtraction, which avoids borrowing in subtraction, we can conclude that the sum of the digits of the product P is 9x1994, or 17946.

Mr. Feng teaches mathematics at the Oklahoma School of Science and Mathematics (OSSM). He and his wife were both highly respected mathematics teachers and coaches in Tianjin, People's Republic of China, where they directed a branch of the Johns Hopkins Study of Mathematically Precocious Youth.

KEEPING YOUR HIGH STANDARDS UNDER CONTROL

Who's in Charge?

Be all that you can be. An inspiring—and daunting—goal. Of course, it's thrilling and rewarding to excel at something that you enjoy and value. However, the desire to realize your potential can also become a bit intimidating. "How far can I go? How will I know when I am all that I can be—or as close as I can get for the moment?"

As a highly able student, you've probably been encouraged to excel by parents and teachers who have noticed your abilities and accomplishments. As far back as you can remember, your achievements may have surpassed those of most of your agemates. Your exceptional abilities, then, may be as basic to your sense of self as any other aspect of who you are. And since you spend most of your time developing your abilities, both in and out of school, they only become more important to you with the passing of time.

There are, however, potential dangers associated with those high personal standards and expectations. If it's not clear who's in charge—you or the expectations—you may find yourself at the mercy of free-floating high expectations, and lose sight of what you really want.

Healthy or Unhealthy High Standards

Ah, but man's reach should exceed his grasp,
Or what's a Heaven for?

Robert Browning

Without question, the high standards of deeply motivated men and women have benefited humanity. The world's great discoveries and accomplishments would never have seen the light of day had it not been for the vision, hard work, and high standards of scientists, artists, and other creative minds. You have probably been inspired by several such individuals and their celebrated efforts.

But while high standards are an invaluable tool in the achievement of your goals, they should always be just that—a *tool*—not the boss, not the final arbiter of your success or failure. Unfortunately, when you forget this, your inner critic can take on a life of its own. And that can be hazardous, especially if the only thing your inner critic knows how to say is "not good enough." Without appropriate supervision, your high standards can be transformed from useful tools into weapons that are turned against you. Ironically, they then compromise your ability to accomplish the very goals they are pressuring you to achieve.

Avoid this problem by keeping these two important questions as your touchstones: "What underlying purpose do I want my high standards to help me accomplish?" and "Are my high standards, in fact, helping me accomplish this purpose?"

Standards, Goals, and Purpose

When standards rage out of control, it is usually because they have broken loose from the mooring of your underlying purpose. The quest for a deeply-held sense of purpose is long and involved; you'll probably spend many years fully developing yours. At this point, you may have only a general sense of what you'd like to accomplish and the values you want your life to reflect. But just being aware that you have an important, underlying purpose can keep you from being overwhelmed by your immediate tasks and goals.

The second question—are your high standards helping or hurting you?—is critical to both your achievements and your well-being. "How are my standards affecting me? Are they helping me accomplish my goals? Or are they actually making it more difficult for me to achieve my goals?" Monitoring the effectiveness of your standards is one of the best ways to keep them under control.

Your deepest commitment should be to your broad purpose, not to particular goals. For example, "I want to help sick people," not "I want to go to Harvard Medical School." For most people, goals alone—even successfully achieved goals—are not enough. Only a deep, personal vision of who you are and what you want your life to be about will help keep you balanced and satisfied as you make your way through life.

When Standards Run Amok

He had a dream in which he saw a scrawny, underfed little mare forced by drunken peasants to try to pull an impossibly heavy cartload. . . . In the dream he realized the senseless cruelty with which he was beating himself into doing something that was as impossible for him as it was for the mare to pull the heavy cartload.

Karen Horney

When standards break loose from purpose, they take on a life of their own, making all-or-nothing demands: if you're not *perfect*, you're a failure. Many sci-fi stories give voice to the fear that, one day, computers will fail to obey their human creators and will relentlessly and implacably pursue an agenda of their own. For students whose high standards have become compulsive, the computer-run-amok nightmare has already begun: a tyrannical program inside them has broken away from their rational control and has gone on a destructive rampage.

How do you know if a terminator is loose inside you? It's time to start worrying if you are damaging your health or if your perfectionism is compromising your ability to accomplish your goals—and if, even knowing all that, you still can't stop your self-destructive thoughts or behavior. The price of such inner turmoil is high and can include such life-threatening consequences as depression, eating disorders, drug abuse, and even suicide.

Those who suffer from compulsive perfectionism often shrug it off—"It's just the way I am"—but it's no laughing matter.

Our tendency to submit to unrealistic and self-destructive inner dictates is sometimes fed by our admiration for exceptional historic figures who made great sacrifices in order to fulfill their ideals. Our culture rightly celebrates individuals such as Mahatma Gandhi and Martin Luther King, whose dedication to their work was unswayed even by death threats. Marie Curie continued her research despite the damaging effects of radiation on her health.

It's true that exceptional people do sometimes engage in risky activities. But they do so out of a deep and highly developed vision or sense of purpose, not because of the demands of impossibly high standards.

If you suffer from a destructive inner tyrant, think about getting psychological help. And the sooner the better—this is not a condition that spontaneously improves with age.

Living With Your Goals: A Long-Term Perspective

One of the main reasons to stay on top of your goals and take control of your standards is that doing so offers you the best chance for long-term health and achievement. You may be able to get by in the short run, whipping yourself into line with unreasonable expectations; but eventually, something's gotta give. By creating sustainable goals and moderating your inner critic, you greatly improve your chances for long-term success *and* happiness.

Succeeding in the long run also requires that you break the habit of expecting always to be The Best. One day, while pursuing your personal goals, you will encounter a community of people in which many can match you talent for talent. If you've been living under a "#1 or bust" imperative, facing your true peers can be quite traumatic.

Now that I'm a graduate student in math, I no longer stand out as a prodigy. About 20% of my class is, like me, at least two years accelerated. Several of the professors, including my advisor, received their Ph.D.s as early as 21 years old.

Meeting her true peers for the first time, this individual needed a sense of self that was grounded in her personal purpose. With that to hang on to, she could enjoy the fact that she had ***arrived*** and not berate herself for no longer standing out as exceptional.

In addition to working on your personal vision or sense of purpose, you can prepare yourself for the ego bruisings that lie ahead by participating in activities—clubs, competitions, summer programs—where you do meet your intellectual peers. Observe your feelings. Be aware of any anxiety or anger you feel about not being the best. Do you see yourself differently? Remember, you are the same person you were yesterday or last week; you haven't lost any of your gifts. Only your frame of reference has changed.

More positively, be aware of the joy of being among your intellectual peers—people who can challenge you and truly appreciate your personal victories. You have lost the pride that comes from being a big fish in a small pond, but overall, your gains can greatly exceed your losses.

The Less Than Exceptional Parts of You

More being than I'll ever use springs up
in my heart...

Rainer Maria Rilke

What about all those parts of you that are not—and probably never will be—exceptional? It can be hard to accept that you are not equally excellent at everything. Often we feel rather ashamed of the parts of ourselves that don't measure up to the same high standards as our exceptional aspects do. We may even decide to limit our activities and pursuits to those at which we excel, renouncing the aspects of ourselves that seem mediocre.

There is so much more to each of us than we will ever be able to explore, let alone perfect. And ironically, renouncing the less-than-exceptional aspects of ourselves can, in the long run, limit our productivity and creativity. For many highly creative people, the pursuit of a favorite pastime provides a much appreciated—and much needed!—change of pace. Such a breather allows you to return to your work with renewed vigor and fresh insight. So don't abandon your just-for-fun pursuits; they can make an important contribution to your long-term health and vitality. And who knows what great insights they may inspire!

The less-than-exceptional aspects of ourselves can also be invaluable teachers: through them we learn patience, compassion, humility—hard lessons for people who like to live up to high standards. They also help us learn to laugh at ourselves—not the cruel laughter of the inner critic, but the laughter that comes from accepting our humanity.

When You Don't Achieve A Goal

The high that proved too high,
the heroic for earth too hard,
The passion that left the ground
to lose itself in the sky,
Are music sent up to God
by the lover and the bard;
Enough that he heard it once:
we shall hear it by-and-by.

Robert Browning

How do you talk to yourself when you have a setback? Do you use it as an excuse to call yourself a failure? Or do you step back, think about what happened, and decide how you want to proceed, utilizing the additional information that "failure" always bestows on us? How you talk to yourself will determine whether a setback becomes an opportunity to punish yourself or to do some serious thinking.

No great success was ever achieved without a lot of hard work—or without false starts, dead ends, setbacks, and even what seem at the time to be outright disasters. Such times are when you most need your deep personal values to hold on to, to help you retain some perspective.

A Journey of a Thousand Miles . . .

Human beings can alter their lives by altering their attitudes of mind.

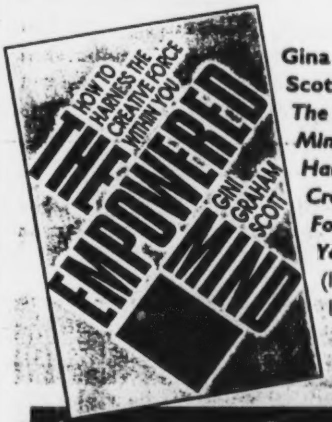
William James

Each of us is unique—in our gifts, our abili-ties, our interests and passions, our personal-ities, and in the insights that our family and cultural backgrounds give us. Through the trial and error of daily life, we each struggle to define our personal goals. And through more trial and error, we each try to live lives that manifest our values and vision.

Each step we take can change us. Each decision, each consequence teaches us something about ourselves and gives us the opportunity to see things in a new way. As we move through life, we are given the chance again and again to see how well we have matched our means and goals to our interests, abilities, and purpose.

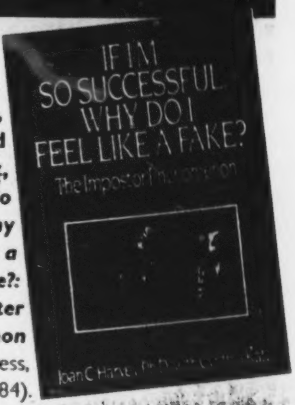
High standards can be an invaluable source of motivation and inspiration as you strive to lead a life that satisfies your deepest purpose. Or they can form a mindless and relentless inner critic that drains you of energy that you could put to much better use. There is no shortage of negative influences in our world. With effort, you can make your high standards your ally, not your tormentor.■

For Further Reading:



Gina Graham Scott, Ph.D., *The Empowered Mind: How to Harness the Creative Forces Within You* (Prentice Hall, 1944).

Jane Burka, Ph.D., *Procrastination* (Addison Wesley, [illegible]



Joan C. Harvey, Ph.D. and Cynthia Katz, *If I'm So Successful, Why Do I Feel Like a Fake?: The Imposter Phenomenon* (St. Martin's Press, 1984).

STUDENTS REVIEW

YALE UNIVERSITY

■ ■ ■

College Review Series

This on-going series is intended to aid prospective college students in their search by offering insiders' views of selected colleges and universities, as expressed by current undergraduates or recent graduates who have exceptionally high academic ability. These students share a general bias in judging undergraduate education: they all have high expectations for a college or university's academic standards, its institutional and instructional flexibility, and its respect for nurturance of emerging talent. In this issue, we focus on Yale University.

Note that the number of student reviewers is small. Consider their personal perspectives as only one component while you gather factual information and impressions from such other sources as college catalogs, site visits, talks with officials and students on campus, and the advice of your guidance counselor and teachers.

Yale University

Our reviewers include eleven students, who major(ed) in American studies (1), archaeological studies (1), computer science (1), East Asian studies (1), English (1), environmental studies (1), ethnic studies (1), history (1), humanities (1), math (2), molecular biophysics & biochemistry (1), music (1), and philosophy (1). (The number of majors exceeds eleven because several students have double majors.) Students' comments appear within quotation marks.

Quality of Academic Instruction for Undergraduates

The word that was repeatedly used in describing the quality of instruction and the academic resources was "excellent." The faculty generally received high marks for accessibility. Rather than a core curriculum, Yale has a system of distribution requirements. This system, and the range of courses available to fill the requirements, received unanimous praise.

"Yale focuses a lot of attention on its undergrads, as opposed to some other major research universities. Professors teach almost all the classes (except things like calculus) and tend to be very accessible—in addition to regular office hours, many profs invite students over to their houses or eat with students in the dining halls."

"I have never found a professor who refuses to meet with students. Some of the more famous professors may seem intimidating, but are accessible if you can overcome feeling intimidated."

"The best. The music department has quite a few genius-caliber musicians. My experiences are admittedly different from most, but I count two professors as close personal friends, and two others as peer acquaintances. That's the kind of faculty-student interaction Yale affords."

"I was in a special humanities program for freshmen called Directed Studies—an extremely demanding program (some called it 'Directed Suicide') that consists of three related seminars (literature, philosophy, and history & politics) taught mostly by full professors. Directed Studies allowed me to have access as a freshman to famous professors—people who helped guide my course selection later on."

"There is no set 'core' curriculum, thank goodness. Instead there are distribution requirements; these do not track students into special courses for the uninterested, as 'cores' tend to do. There are many small seminars (students can find people to teach special courses above and beyond the regular 2000+ offerings)."

"The course offerings are staggering. There were always many more courses available that interested me than I could take in a semester. And academic resources are incredible; I was amazed at the stuff we had in our libraries."

"I got an outstanding education. But not everyone does. Attending a research university, students have to make a choice between hiding out in the back of large lecture courses and learning nothing or working hard in a small seminar and learning a great deal. Both options are very possible at Yale."

"There's a lot of talk about grade inflation, and I think it does exist. But (and I don't mean to boast) I expected to get As in most of my courses. I saw far more people receive poor grades as a result of simply not doing work than as a result of trying and still doing poorly."

Social Life

Yale received high praise from all reviewers for the social life it affords its students. The Residential College organization of the school provides a relatively secure, small-group environment and fosters a sense of community. The extensive array of extracurricular and volunteer activities was also highlighted as an important aspect of what Yale has to offer.

"Social life for undergrads is excellent. For a school of its size, the campus is relatively small. There are few social distractions in New Haven outside Yale, so the energy of the students tends to be focused on campus, with the result that there is always a lot going on."

"The social life is quite diverse, but it all derives from the university. New Haven offers little except a few bars and movie theaters. College-sponsored theater groups, musical performances, movie clubs, other social events, and extensive extracurriculars are the social life of Yale."

"Yale has so much going on within it that you don't need an external social environment."

"The Residential College system (modeled on Oxford's) is extremely important to the social life. By breaking down the 5,000 members of the student body into 400-person groups who live together for four years, it creates a smaller school atmosphere within the larger university. It's excellent socially for students who get along best in a small group environment. Because Residential Colleges are basically assigned randomly before freshman year, each college tends to be a representative mix of the student body."

"The Residential College system provides a community-within-the-community that I found reassuring; however, it can also make getting to know people outside one's college, if not more difficult, at least less likely."

What Do You Like Best About Yale?

"The friends I made and the innumerable stimulating conversations I had with people in the dining hall, courtyard, or even crew lagoon. I liked the sense of community and camaraderie that allowed me to learn more about myself and the world around me in a (mostly) painless way."

"The education I received. I'm applying to graduate school right now, and I feel as well prepared as any student in the country."

"Involvement in extracurriculars. I also loved my classes and my major. Best, though, are the people and my interactions with them."

"The academic freedom afforded by a system of distributional requirements rather than a set of core courses."

"In an odd way, the daily reality of life in New Haven. As a college student, it is sometimes hard to remember that a senior thesis is not the biggest burden a person can face; at Yale, it's not easy to forget. Walking out of a seminar on Chaucer and being asked repeatedly for spare change is not a pleasant experience, but it is a salutary one. It forces you to be aware of your privileged status within the world. It also prompts some people to become involved—a third of all Yale students perform community service."

What Do You Like Least About Yale?

Targets of criticism were New Haven and Yale's privileged elite tradition.

"Safety is an issue in New Haven. With adequate precautions, it's not a big issue, but always having to be careful and needing to avoid certain places at night was definitely a minus."

"New Haven stinks. It has all the disadvantages of a big city (crime, poverty, pollution, traffic) without any of the advantages."

"Yale's aura of privilege. It is fairly diverse, and it makes an effort to be so. But the students, for all their ethnic diversity, are—or seem to be—quite affluent. The true barrier is class. There was a woman in my Shakespeare class who dressed in 'heavy metal' T-shirts and wore too much eyeliner. It was amazing to watch how quickly my liberal classmates recoiled."

"The self-satisfaction of most Yale students (although I probably share in it). When I was applying to college, I read in one guidebook that 'everyone at Yale secretly thinks that everyone else in the world (with the possible exception of Harvard students) really wanted to go to Yale and couldn't get in.' Never did a guidebook print truer words."

YALE UNIVERSITY

New Haven, CT 06520
(203) 432-1900

- 4-year private coed university
- Urban campus in a small city
- Semester system
- Full-time undergraduate enrollment 1993-94: 2,817 men; 2,217 women
- Special features: Yale Repertory Theater, Beinecke Rare Book Library, art galleries, museums, observatory, golf course

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"I think it's harder to be a person of color at Yale than at a place like Berkeley, mostly because of the strong sense of New England white male privileged tradition that pervades many of the rituals."

Who Would Be Most Compatible with the Academic and Social Atmosphere at Yale?

"There's no one type of person who would fit in best at Yale. Qualities that are important, though, are open-mindedness, the ability to enjoy challenges, an inquisitive spirit, and a desire to work hard. There are many kinds of people at Yale and many niches to fit into."

"Motivation is the key. I found little overt pressure at Yale in the sense of cut-throat academic competition. But I did find a subtle, pervasive pressure: one feels a need to be exceptional at something. It may be academics, it may be extracurriculars, but it has to be something. With so many brilliant, talented, or just plain privileged people around, there are inevitably times when one feels inadequate; and this may be why some people feel oppressed there. But a person with a strong sense of self and an ability to motivate him/herself can thrive in Yale's environment."

"Someone who is intensely involved in one thing. Not all students at Yale are dedicated to their studies, but nearly everyone is dedicated to something. No extracurricular commitment is ever casual. This can be a problem, because people aren't really free to dabble in something new. But it also creates the vibrant and accomplished cultural life that distinguishes Yale."

If You Had It to Do Over Again, Would You Go to Yale?

All reviewers said yes.

"Definitely. The combination of academics, extracurriculars, and intellectual and social life was, for me, unbeatable. True, many things would be similar at the other schools I looked at when I was a senior in high school; but looking back, I think the little differences really add up—Yale was just a better place for me to be."

"Absolutely. Although I sometimes do not approve of Yale, the institution, I have had invaluable life-changing experiences, pushed my mind, made close friends, and had a lot of heartache and fun."

"Yes. As difficult as it was to adjust to the WASP male tradition, I know I am stronger for it, as well as better prepared to deal with such situations (emotionally and intellectually) in other parts of my life. Besides, the education I got was stellar."

"Absolutely. I would give so much for just one more year there."

As you try to find the college or university best suited to you, the views of Yale presented above may be helpful. Keep in mind that these students might have had similar positive or negative experiences had they attended a different university. At any college, it is important for the individual student to seek out challenging academic experiences and the best professors, and to create a social life that best fits his or her personal style. ■

Note: The students quoted in the College Review Series are expressing their own views, which are not necessarily those of JHU or CTY.

CREATIVE MINDS

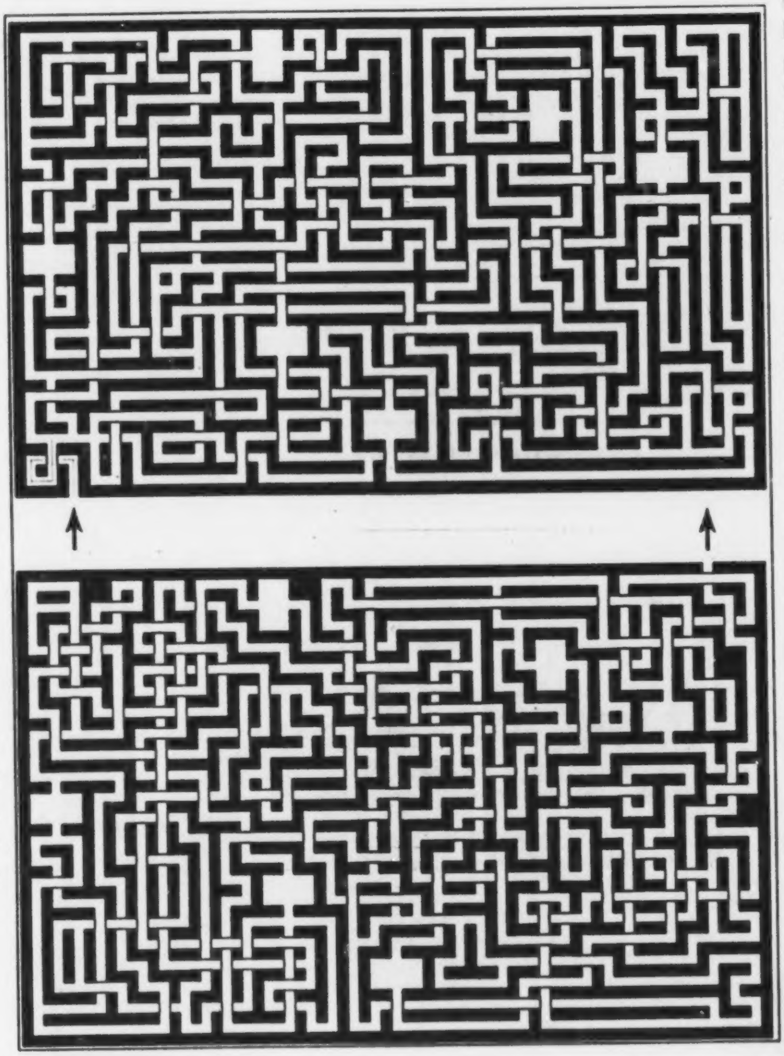
ImaGiNe...

Submit your creative work—brain teasers, short stories/essays/book reviews. We look forward to hearing from you.
Please write to *Imagine* • SET at CTY • The Johns Hopkins University • Baltimore, MD 21218

ANOTHER PUZZLE: *by Tim Boester*

DIRECTIONS

The objective is to enter the top maze (arrow) and leave the bottom maze (arrow). Every time you come to one of the little "rooms" (white rectangles), jump to the corresponding room in the other maze. As you move through the mazes, obey the underpasses and overpasses (as shown in the initial dotted line). You are not required to pass through all the rooms.



Fascinated by mazes and puzzles, **Tim Boester** is also intrigued by roller coaster design. Tim plans to study physics and math when he enters college next fall.

BOOK REVIEW

by Stephanie Davis

For those who have never read any of Orson Scott Card's work, *Ender's Game* will be no less than a revelation. So many times in the course of my reading, I found myself smacking my forehead and saying, "So that's why people do that, or "I never thought of it that way," or "I've been there."

Superficially a typical science fiction novel, *Ender's Game* is set several hundred years in the future after the often-predicted invention of light-speed travel and colonization of other planets. Seventy years before the story opens, violent contact with an alien race had led to a forced alliance between the nations of Earth, in an effort to prepare for the next and more serious confrontation.

Here begin the unique twists and novel concepts for which Card is so renowned. Earth's survival and semi-triumph in the last battle was made possible only by the brilliant strategies of a little-known human admiral. Unprepared and driven by desperation, he had led his forces to victory at a time when the *buggers'* ships so far outnumbered and outclassed the human fleet that Earth's destruction seemed imminent. Now, as the next and final war draws near, humanity is in need of a still greater military mind—one bred and trained for a vital command in the ultimate showdown.

Enter Ender, a precocious child with a less-than-childlike experience of the world. Since birth, he has lived with the knowledge that his very existence was authorized by Earth Government in hopes that his was the right gene combination to produce a mental superman, a hero for the human race. At six, cognizant of what lies ahead and prepared to do his duty, Ender is deported to Battle School and begins the grooming process to become the savior of mankind.

Stephanie Davis is a 10th grader at Thomas Jefferson High School for Science and Technology in Alexandria, Virginia. She is a senior editor for the literary magazine *Fragments* and enjoys writing, reading, and participating in forensic (dramatic excerpts) competition. Stephanie's original works have received national recognition from the Foundation for a Creative America and the American Academy of Achievement.

VOLUME 1 • NUMBER 5

ImaGiNe...

Opportunities and Resources for Academically Talented Youth

May/June 1994

Spotlight On

EXPLORING CAREER OPTIONS

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Professionals and students confer at a CTY Career Day.

Photo by Bob Stockfield

Some students choose career interests and even career goals at a very young age, identifying themselves as tomorrow's physicians or architects long before such a choice is necessary.

Others find it harder to imagine what they will do when they enter the working world. Choosing the ideal college seems manageable, but sifting through options on the other side of student life seems more difficult. To these students, life after school looks murky—exciting, perhaps, but remote and uncertain.

Whether you feel clear or confused about the career choices that await you, some important considerations can help you think effectively about your working world destinations. And once grounded in the issues of career planning, you can start making maps of directions you might take and paths you might forge. ■

Dear Readers,

Imagine was developed to help academically talented students find the resources they need to be challenged during their precollege years. Recognizing that the design of an optimal educational program requires consideration of students' unique abilities, needs, and learning styles—as well as available resources in the home, school, and community—*Imagine* seeks to inform students about ways to accelerate, enrich, and/or supplement the basic school curriculum.

This issue marks the end of our first academic year of publishing *Imagine*. We are now preparing articles for the five issues we will publish next year, beginning in September. These focus topics will be featured in 1994-95:

September/October **Mathematics**
November/December **Humanities**
January/February **Academic Summer Programs**
March/April **Science and Technology**
May/June **Foreign Language Study and Study Abroad**

Each issue will also include articles on other education-related subjects, such as the learning disabled/gifted student, home schooling, and early college entrance programs. We will continue to include the *College Review Series*, *Mailbag*, *Coach's Corner*, and *Creative Minds Imagine*, as well as information on competitions, college admissions, and other topics that were popular this year.

A Fascinating Classics series will be launched and will feature explorations, by two of our writers, of important literary works. In 1994-95, this series will focus on five narratives of personal quest: *Emma*, by Jane Austen; *Great Expectations*, by Charles Dickens; *The Great Gatsby*, by F. Scott Fitzgerald; *The Woman Warrior*, by Maxine Hong Kingston; and *I Know Why the Caged Bird Sings*, by Maya Angelou. Special attention will be paid to each work's treatment of the relationship between *self and society*. To take full advantage of this new series, read as many of these books as you can over the summer; be sure to read *Emma* by September.

You can help ensure that *Imagine* meets the needs of academically talented students such as yourselves. We welcome your comments about articles we've printed, your suggestions for new topics, and your questions for the *Mailbag*.

Also, send us your articles for publication. Tell us about your experiences in special programs for the gifted (for example, see Kimberly Knowles' article on academic summer programs in the past January/February issue). Share your thoughts with other academically talented students; learn from each other's experiences. And don't forget to submit book and movie reviews, short stories, brain teasers, and other original endeavors for *Creative Minds Imagine*.

If you are a subscriber, be sure your subscription does not lapse. If you are not a subscriber, register **now.** Tell your friends, teachers, guidance counselors, and librarians about *Imagine*. Our introductory offer of $25/year has been extended through the summer. For information about subscriptions, call the Johns Hopkins University Press at (410) 516-6945 or (800) 548-1784.

It's Not Too Late!

If you discovered *Imagine* only recently, you missed these focus topics during the past year: *Entering Academic Competitions, Planning Ahead for College, Choosing Academic Summer Programs,* and *Getting the Best Precollege Education.* You may obtain copies of back issues for $5 each by calling the JHU Press at (410) 516-6945 or (800) 548-1784.

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Opportunities and Resources for Academically Talented Youth

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HOW TO THINK ABOUT YOUR CAREER WHEN YOU HAVEN'T EVEN DECIDED WHERE TO GO TO COLLEGE

Your Guide to Occupational Map-making

From childhood until the last years of life, human beings imagine and plan for the future. You may have early memories of dressing up as a pirate, bandaging siblings' make-believe wounds, or pretending to be a teacher. This playful testing was not just an important imaginative activity—it was a preliminary step on the road towards your career.

Although it's good for you to continue to visualize and prepare for your working world destinations, career planning is a balancing act, especially in the early stages. Your vision, your drive, your developing sense of where you are going, all need to be moderated with flexibility and perspective. An important part of that perspective is remembering that you have lots of time. Before college, occupational map-making is a hobby, not a vocation, and is nothing to worry about.

Early Career Choice and the Hazards of Deciding Too Soon

Perhaps you are thinking that you already know what you are going to do with your life. You don't want to make new maps: the map you have now—you may have designed it years ago—is all you need to guide you towards your ideal career.

Students who maintain an extremely focused career interest from a very early age are sometimes known as *early emergers*.[1] If you are an early emerger, you may already have a career goal to which you are seriously committed.

Your early career choice may have resulted naturally from your intense interests and unusual abilities. Students with exceptional talents are likely to focus on a specific area of study and, relatedly, to zero in on a specific career. It comes as no surprise when an avid math student envisions herself working as a statistician or when a student who enjoys learning languages imagines himself as a future linguist, translator, or teacher.

You should pay attention to these kinds of developing career interests, asking for the support of your parents, teachers, and counselors in finding ways to explore them. On the other hand, be aware that it is possible to make career choices too soon. "The future" is a dynamic state: it changes along with the person who imagines it. While it is important to respect your interests, it is just as valuable to consider how different your outlook may be in a few short years. You may feel overwhelmingly sure that you want to be an archaeologist or a violinist, but try to keep in mind the full spectrum of your career possibilities.

One way to maintain a balance of interests and competencies is to pursue a broad background *and* explore a primary interest. There is no need to make unnecessary sacrifices—to substitute a less interesting alternative for a long-awaited advanced chemistry course. But while seeking to be true to yourself and your main interests, don't place unnecessary limits on the range of your development.

After all, in today's interdisciplinary environment, areas of concentration are increasingly linked. Historians read physics, and physicists read poetry, to illuminate their own fields and the links among fields. So, don't overspecialize; as novelist E. M. Forster urged in *Howards End*, "Only connect." As you seek connections among seemingly distinct trains of thought, you will open yourself to deeper levels of understanding. And at the same time, you will keep your options open.

Multipotentiality and Career Indecision

Many students do not make early career choices, but instead wrestle with career indecision. Some who are not early emergers not only are undecided about which career option to take, they have *no idea* what they will do.

If you are such a student, you already know that the wide variety of your interests and strengths just adds to the confusion. You are both blessed and burdened with what is sometimes called *multipotentiality*. Able to do many things very well, you can't easily eliminate choices from your career menu. With your complex potential, you need special strategies for tackling your outsized career maze.

If you are coping with this kind of caree confusion, you may sometimes feel that you dilemma is unappreciated by others. To thos with a different outlook, multipotentiality ma seem like a non-problem—comparable, say, t having money in more than one bank accoun What does a math whiz-poet-actress have t complain about?

Educators and psychologists believe tha multipotentiality *can* cause problems in the career development of talented students.[2] Students who shine in school, where diversity o interest and ability is often applauded and accommodated, will not necessarily find it easy t concentrate their interests and commit to career. They may neither want nor know how t streamline their focus.

---

[1] B. C. Marshall, "Career Decision-Making Patter of Gifted and Talented Adolescents," *Journal of Care Education*, 7 (1981): 305-310.

[2] B. A. Kerr, *Counseling Gifted Students* (India State Department of Education, Indianapolis, 1989)

Responding to Multipotentiality: Reducing the Pressure of Career Development

One way multitalented students may deal with career confusion is through recognizing that developing a career—or over a lifetime, two or three careers—does not require abandoning other interests. Although you will have to streamline your focus to define current career goals, you do not have to abandon enthusiasms or neglect skills that are important to you.

As one happily employed recent college graduate put it, "Perhaps, in place of career, we should emphasize the concept of *life work*." Thinking in terms of life work encourages you to see that you can meet important goals in many aspects of your experience, not just in your career endeavors. Your life is bigger than your career, and if you are resourceful, you will find ways to keep your interests alive.

What changes as you move from academic life into more career-focused arenas is that you're likely to experience less freedom in deciding when and how much to devote yourself to your many interests. If you choose a career in laboratory research, you will not be able to design software or play the piano during the working day. But you can still find ways to grow in those areas outside work. (Celebrated poet Wallace Stevens worked his entire life in the insurance business.) The key will be creating and maintaining a schedule for your life that makes room for your diverse interests.

Moving Ahead Realistically

Fitting your interests into your life, not just into your primary occupation, involves recognizing that your career may not always perfectly match your interests. Seeing your workday life as only one arena in which you can work towards meaningful goals reduces unrealistic pressure to find the *perfect* job. This pragmatic view is especially helpful in the early stages of your working life, as you meet the requirements of apprenticeship and work your way up in the field you select.

Again, balance is the key. While visions of the perfect job may actually hold you back in your career development, you have good reason to be optimistic. Qualities such as patience, dedication, and belief in yourself can greatly enhance your career exploration. With energy and creativity, you may well discover a career that incorporates the interests and skills most important to you.

If you do not find your perfect career out there in the working world, make one up! Creating your own job allows you to make room for greater self-expression and to downplay some negative factors you may encounter in existing jobs. The world of computer technology, for example, offers an abundance of examples of motivated young people who created their own positions—and the economic market to sustain them.

The Role of Values in Career Development

If reviewing your interests and skills does not provide you with enough of a sense of where your career path is headed, you may want to consider letting your beliefs and values help light the way. Both early emergers and the undecided can benefit from running their career possibilities through the test of their beliefs.

Ask yourself questions such as these: "What values do I seek to uphold in my working life?" "What can I offer other people?" "What kinds of work seem most valuable to me?" Your responses may help you clarify what significance different kinds of work hold for you.

If you love math and languages, and can't make up your mind whether you most want to be a math professor, a statistician, a French professor, or a writer, take a look at how well each profession reflects your personal outlook. Perhaps teaching appeals to your fundamental desire to help young people; perhaps you value communication above all else; or perhaps you have a strong belief in a free market economy. Along with your interests and skills, these kinds of values can provide helpful, and even essential, career guidance.

Of course, holding your career interests up to the light of your beliefs is a demanding process. But it may well be worth the effort, if the result is a career chosen in genuine accord with your values.

As you sort through these complex issues, remember that you have lots of time. Not only are you many years from having to make decisive career choices, you are also likely to have many chances to modify and change your early choices. Most adults today have more than one career. If you don't meet your career goals the first time around, you'll be in a better position to make a more informed choice the second time around. ■

How Parents and Educators Can Help Students Sort Out Their Career Options

Career counselors believe that parent education is an important component in guiding students towards optimal careers. Parents not only are highly influential role models, but also are in a position to contribute a great deal to their child's career planning. In fact, *parent* orientation—through programs and discussions facilitated by schools and talent searches—may be the most effective component of career preparation for young students.

The optimal environment for a child's career discovery is one of encouragement, practical assistance, and balanced perspective. Parents need to be sensitive to their influence on their children's sense of the future; career goals should never be imposed on children by adults.

In order to provide appropriate nurturing for students' own early career interests, parents and educators need to be alert to unusually strong abilities or enthusiasms. When possible, students should be provided with relevant training and resources. Parents and educators can be extremely helpful in assisting students who want to secure mentorships, internships, or other kinds of exposure to fields that interest them.

When students are perplexed by multiple career possibilities, parents and educators can provide reassurance and guidance. Students should be counseled that there is no need to select a career before college. At the same time, parents and educators can provide practical assistance—reading material, exposure to different kinds of working environments, and programs in career exploration—as well as emotional support to young people who seem ready to grapple with their future directions. ■

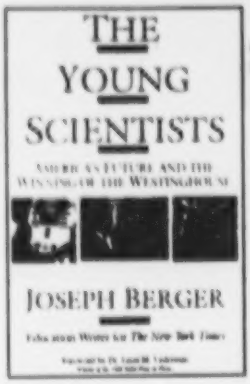
Creativity is an important aspect of career development. Even if you don't plan to create a career, you can use your imagination to go beyond the career possibilities most obvious for you and to explore a broader range of choices. If you love and excel in math, you have analytical skills that would be valuable not only in the fields of teaching, research, and statistics, but also in law, economics, and many other areas. If you are a good writer, you don't need to be a teacher, editor, or journalist to make good use of your skills.

Westinghouse Scholarship Winners, 1994

A board of leading scientists selects forty finalists from among the hundreds of students who each year submit projects to the Science Talent Search. The forty finalists attend a five-day program in Washington, DC, at which they present their projects to the public and are interviewed by scientists. Thirty of the finalists receive $1,000 scholarships, and ten are selected to receive larger awards.

This year's top ten winners are:

1. **Forrest Anderson,** Helena, Montana, "Pyrolytic/Catalytic Chemical Recycling of Plastic Waste," $40,000 scholarship;
2. **Jennifer Lin,** Flushing, New York, "Cloning and Analysis of a Component, GRB2, in Human IGFR Signal Transduction," $30,000 scholarship;
3. **John Staub,** Sisseton, South Dakota, "Children + Hands-On Learning = Interest," $20,000 scholarship;
4. **Robert Servis,** Alexandria, Virginia, "An Investigation of Trees in Lattices," $15,000 scholarship;
5. **Steven Sherman,** Winona, Minnesota, "Effect of Winglets on Drag of Aircraft Wings," $15,000 scholarship;
6. **Flora Tartakovsky,** Queens, New York, "Major Epitope of Gp210 Recognized by Autoantibodies from Patients with Primary Biliary Cirrhosis," $15,000 scholarship;
7. **Janos Zahajszky,** Canton, Massachusetts, "Effect of Dispersant Corexit 9527 on #2 Heating Oil's Toxicity on *Artemia salina*," $10,000 scholarship;
8. **Jennifer Kalish,** Baltimore, Maryland, "Molecular Genetic Approach to Understanding Aluminum Toxicity in Eukaryotes," $10,000 scholarship;
9. **Margaret Bothner,** Falmouth, Massachusetts, "Radon in Falmouth Homes and the Adsorption of its Radioactive Daughters by Secondary Cigarette Smoke," $10,000 scholarship;
10. **Jamel Oeser-Sweat,** New York City, New York, "Loofah Sponges as Reservoirs and Vehicles in the Transmission of Potentially Pathogenic Bacterial Species to the Human Skin," $10,000 scholarship.


THE YOUNG SCIENTISTS

JOSEPH BERGER

For More Insight...

Joseph Berger

The Young Scientists: America's Future and the Winning of the Westinghouse

(Addison-Wesley Publishing Company, 1994)

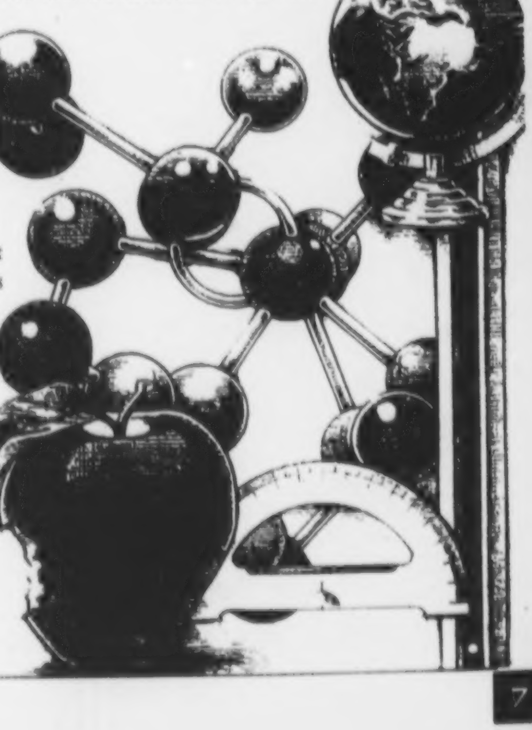
To learn more about the Westinghouse Science Talent Search and its impact on science education, read *The Young Scientists*, by Joseph Berger, Education Writer for *The New York Times*. Berger profiles several Westinghouse competitors and winners, who speak eloquently about their research experience. He also takes a close look at the contestants' families and their schools, as he tries to identify the conditions most likely to generate independent young scientists.

Berger is especially interested in schools—such as Bronx High School of Science—that have outstanding records in producing Westinghouse winners. Why should one high school in a depressed urban area have nurtured such a significant proportion of winners? According to Berger, the answer lies in the school's intense preparation and support of its students and, most importantly, in its fundamental attitude that students can and should participate in creative scientific experimentation.

Science is something you *do*, not something you learn from a textbook: this is the essential message Berger distills from the success stories of the Westinghouse winners and the schools that nurture them. And, he finds, this hands-on approach to scientific learning is gaining momentum around the country as more and more American schools develop science programs with strong research components.

Families are important, too. Berger looks at the role of parents and siblings in the lives of young scientists. Many Westinghouse competitors and winners come from immigrant families relatively new to the United States. (This year's seventh-place winner, Janos Zahajszky, left Hungary for the United States with his family when he was nine years old; Janos spoke no English at that time.) The apparent disadvantages of immigrant status and unfamiliarity with American culture can actually help students develop the independence and drive that are essential in scientific research.

As well as determined and independent, are the Westinghouse winners also extraordinarily talented? Berger concludes, "The surprising revelation from interviews with dozens of Westinghouse winners and some of their parents is that most winners displayed no particular signs of precocity. They learned to read and to do simple arithmetic in school, just as their more ordinary classmates did." According to Berger's research, the condition most necessary for the development of scientific talent is the practice of dedicated independent questioning. ■



MENTORSHIPS and Other Hands-On Strategies for Career Exploration

Although some individuals have no trouble deciding which profession to pursue, selecting a career may seem an overwhelming task to many of you. Clarifying your interests, values, and talents—and trying to match them with your opportunities—can be a daunting prospect. However, if you break down the exploration process by focusing on each of your options in turn, the path may begin to seem less intimidating.

And even if you know exactly where you are heading, there are some experiences you shouldn't miss along the way—experiences that can help you realize your potential and boost your chances of making your career choice a successful one.

What Hands-On Strategies Are Available?

Consider exploring your career interests by becoming involved in the broad range of overlapping activities known as *shadowing, internships, and mentorships.* Each can provide you with valuable experience.

In shadowing, you arrange to follow a professional around to get a sense of the everyday activities of that particular career. If you are considering many different career options, shadowing can help you pare down your list. It can also give you the opportunity to observe highly skilled professional work that you may not gain access to during an internship or mentorship.

An **internship** provides a more extended opportunity to observe the inner workings of a professional world. Many organizations offer internships that can give you a taste of the daily activities, attitudes, and lifestyles of the people who work in this field. Some even pay a stipend.

Be aware, however, that the term "internship" covers a wide range of opportunities. At its best, an internship offers first-hand experience in the field you are considering and gives you the chance to talk with insiders about the field, its future, and its training requirements. Sometimes, though, interns may find themselves spending more time on office "go-fer" work.

A relationship in which you are taken under someone's wing represents a more serious commitment on the part of your professional sponsor. While such an association may develop in an internship, it is the very essence of a **mentorship**. In the most rewarding mentor-protégé relationships, the mentor commits to assisting the protégé's development—intellectual growth, widening of horizons, and development of some of the social skills of the profession—while the protégé commits to intellectual exploration and personal self-examination. Academically talented individuals are among those best suited to such an alliance because they tend to be highly motivated and curious learners.

Within this mutual commitment, your mentor can be any or all of the following to you as the protégé:

- *Role-model:* Here is someone who is a few bends in the road ahead of you, who has accomplished something you desire—whether it be the mastery of particular artistic skills, a literary genre, or a scientific technique; the achievement of a degree; or the publication of a personal work.
- *Guide/counselor:* A mentor will almost certainly be able to offer good counsel concerning your educational and career choices. Your mentor's advice can be a great time- and energy-saver as you explore the "how to" of your career development.
- *Catalyst:* Mentors facilitate growth; they nurture and they challenge. Typically, a protégé comes away from the experience with greater maturity, finer leadership skills, and greater self-confidence.
- *Teacher:* The mentoring relationship is an open learning experience, fostering rather than demanding the assimilation of ideas and knowledge. During one-to-one interaction, your mentor can determine the extent to which you are absorbing various skills and information. Your scope of interest and understanding will be enlarged, and your perception of the road ahead will most certainly change.

Why Is Mentorship Important?

Research on the lives of gifted individuals has shown that mentors are among the most important influences on their protégés' choices of fulfilling and successful careers. Mentors have had an important influence on the paths chosen by many prominent historical figures, including scientists, writers, policymakers, and mathematicians.

Furthermore, those who have benefitted from mentor programs tend to demonstrate a greater maturity with respect to career development—a focus on their talents and skills and an awareness of how to further themselves. This is an especially important issue in the education of talented females. Female role-models can help a young woman work through some of the psychosocial pressures she may encounter as she prepares for and pursues her career.

Mentorships are also an important way for the community to fulfill its responsibility to educate the next generation, preparing its members to participate in and contribute to the public welfare. From a purely pragmatic perspective, the community has good reason to ensure that academically talented students have access to the opportunities and the guidance they need to develop their gifts fully and appropriately.

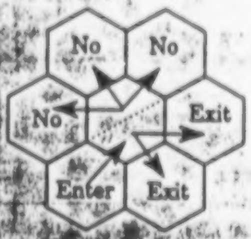
Where Does One Find a Mentor?

Start with your family's network of friends and coworkers. Check out your school's guidance department or resource center for information about existing mentoring programs; many gifted and talented programs have incorporated mentorships into their career education curriculum. Call or visit local businesses, laboratories, galleries, and museums to inquire about existing programs or employees who might be potential mentors.

Some professional societies have educational outreach programs and may help you locate a mentor (see the sidebar on page 9 and the list of organizations following). At a local college or university, you may find graduate students or professors who would be thrilled to draw interested youth to their profession. Seek out retired people; they have a wealth of knowledge and may have more time and flexibility to share it.

ERRATUM NOTE: The fine lines on the puzzle (p. 16) and the solution to last issue's puzzle (p. 11) did not reproduce well, so we've enclosed a legible copy of each. Sorry!

A



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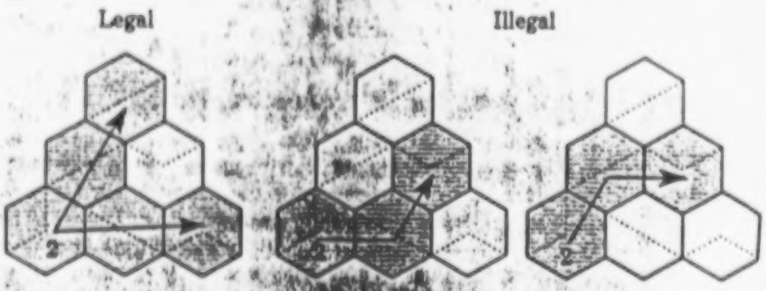
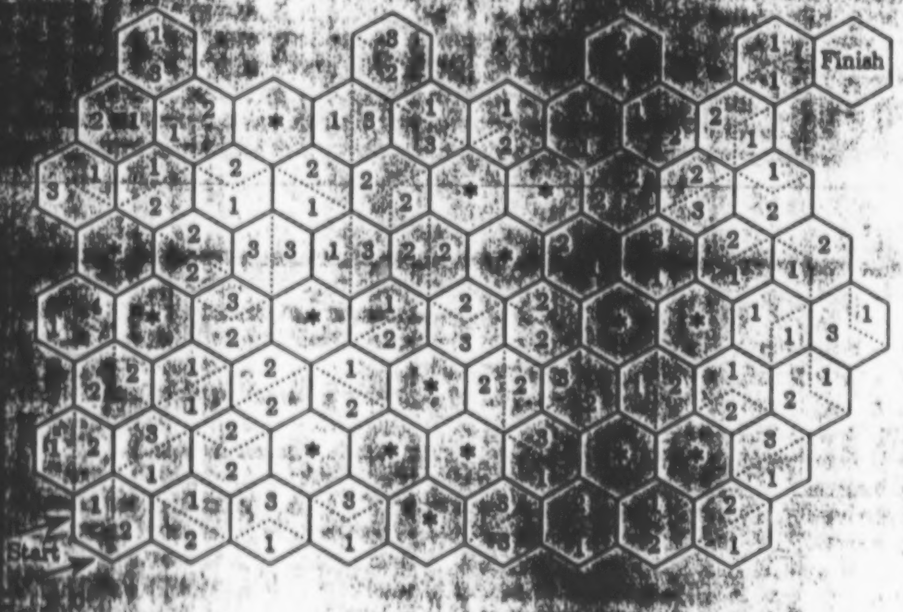
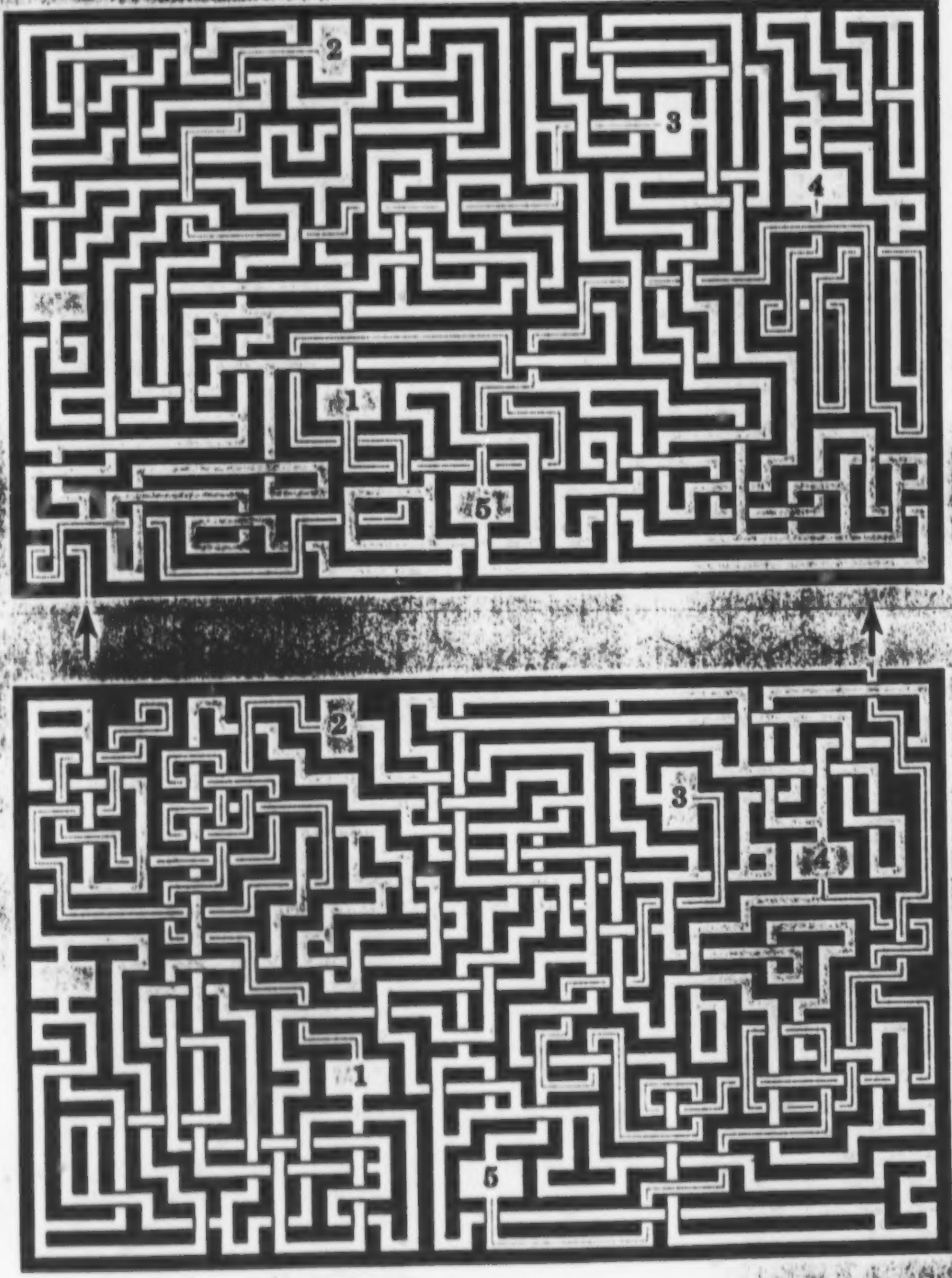






If you do start looking for a mentor, schedule a day to shadow a potential mentor and find out whether the two of you will get along, before you make any commitments to each other. The personal chemistry between mentor and protégé is critical to ensuring that the experience will be a positive and fruitful one, for both of you.

Although we have devoted more space to mentorships than to shadowing and internships, remember that each of the three offers unique benefits. Someone considering medicine as a career may learn more from a week of shadowing a surgeon than from a year of volunteer work in the local hospital. And someone who wants to observe a field from a more detached vantage point might prefer the relative independence of an internship to the commitment and closeness of a mentor-protégé relationship. ■

GETTING THE MOST OUT OF A MENTOR

[illegible]

Some Organizations that Offer Internship/Mentorship Opportunities:

■ ■ ■

Academy of Applied Science
98 Washington Street
Concord, NH 03301
Attn: Susan Zehnder
(603) 225-2072

This non-profit organization offers nationwide summer apprenticeship programs in math and science to minority and socially disadvantaged high school students.

■ ■ ■

National Endowment for the Humanities
Younger Scholars Program
Division of Fellowships & Seminars
1100 Pennsylvania Avenue, NW
Washington, DC 20506
Attn: Leon Bramson
(202) 606-8463

A paid internship funded by the NEH requires the student to work full-time for nine weeks on an individual research project. A scholar of the humanities must advise and oversee the project. Both high school and college students are invited to apply. Write or call for guidelines and application forms. The application deadline for the summer of 1995 is November 1.

■ ■ ■

Research Science Institute (RSI)
Center for Excellence in Education
7710 Old Springhouse Road
McLean, VA 22102
Attn: Maite P. Ballestero
(703) 448-9062

This summer program links highly qualified students completing grade 11 with renowned scientists. About 50 students spend six weeks living on the campus of the Massachusetts Institute of Technology (MIT) and working with their mentors on projects involving sophisticated scientific research.

SOURCES OF CAREER INFORMATION

One of the goals of professional organizations is to encourage students to enter their fields. Upon request, they will send you information packets that describe particular careers, identify sources of scholarships and fellowships, and define other opportunities in related fields. Note: Many professional organizations offer discounted memberships to students.

Below is a sampling of professional organizations. For more extensive lists, check your local library.

American Institute of Aeronautics and Astronautics
Student Programs
The Aerospace Center
370 L'Enfant Promenade, SW
Washington, DC 20024-2518

American Anthropological Association
1703 New Hampshire Avenue, NW
Washington, DC 20009

Society for American Archaeology
808 17th St., NW; Suite 200
Washington, DC 20006

American Institute of Architects
1735 New York Avenue, NW
Washington, DC 20006

American Association for Artificial Intelligence
445 Burgess Drive
Menlo Park, CA 94025

American Art Therapy Association
1202 Allanson Road
Mundelein, IL 60060

American Astronomical Society
Astronomy Department
University of Texas
Austin, TX 78712-1083

American Institute of Biological Sciences
730 11th Street NW
Washington, DC 20001-4521

Industrial Biotechnology Association
1625 K Street, NW; Suite 1100
Washington, DC 20006-1604

American Chemical Society
Education Division
1155 16th Street, NW
Washington, DC 20036

IEEE Computer Society
1730 Massachusetts Avenue, NW
Washington, DC 20036

American Dental Association
211 East Chicago Avenue
Chicago, IL 60611

The Ecological Society of America
9650 Rockville Pike; Suite 2503
Bethesda, MD 20814

American Economic Association
2014 Broadway; Suite 305
Nashville, TN 37203-2418

National Education Association
1201 16th Street, NW
Washington, DC 20036

National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314

Entomological Society of America
9301 Annapolis Road
Lanham, MD 20706-3115

U.S. Environmental Protection Agency
Office of Public Affairs
401 M Street, SW
Washington, DC 20460

American Academy of Forensic Sciences
218 E Cache La Poudre, PO Box 669
Colorado Springs, CO 80901-0669

American Society of Human Genetics
9650 Rockville Pike
Bethesda, MD 20814

American Geographical Society
156 Fifth Avenue; Suite 600
New York, NY 10010-7002

Geological Society of America
3300 Penrose Place
PO Box 9140
Boulder, CO 80301

American Institute of Graphic Arts
1059 Third Avenue
New York, NY 10021

American Society for Information Science
8720 Georgia Avenue; Suite 501
Silver Spring, MD 20910-3602

Modern Language Association of America
10 Astor Place
New York, NY 10003

Linguistics Society of America
1325 18th Street, NW, Suite 211
Washington, DC 20036

Marine Technology Society
1828 L Street, NW; Suite 906
Washington, DC 20036-5104

Mathematical Association of America
1529 18th Street, NW
Washington, DC 20036

American Medical Association
515 North State Street
Chicago, IL 60610

American Meteorology Society
45 Beacon Street
Boston, MA 02108

Academy of Motion Picture Arts & Sciences
8949 Wilshire Boulevard
Beverly Hills, CA 90211

American Music Center
Director of Information
30 W. 26th Street; Suite 1001
New York, NY 10010

National Association for Music Therapy
8455 Colesville Road; Suite 930
Silver Spring, MD 20910

Society for Neuroscience
11 Dupont Circle; Suite 500
Washington, DC 20036

Newspaper Association of America
The Newspaper Center
11600 Sunrise Valley Drive
Reston, VA 22091

American Ornithologists' Union
Division of Birds
Smithsonian Institution
Washington, DC 20560

American Society of Pharmacology
9650 Rockville Pike
Bethesda, MD 20814

National Press Photographers Association
3200 Croasdaile Drive; #306
Durham, NC 27705

American Institute of Physics
335 East 45th Street
New York, NY 10017-3483

American Political Science Association
1527 New Hampshire Avenue, NW
Washington, DC 20036

American Psychiatric Association
1400 K Street, NW
Washington, DC 20005

American Psychological Association
750 First Street, NE
Washington, DC 20002-4242

Seismological Society of America
El Cerrito Professional Building
Suite 201
El Cerrito, CA 94530

American Sociological Association
1722 N Street, NW
Washington, DC 20036-2981

American Solar Energy Society
2400 Central Avenue, B-1
Boulder, CO 80301

National Clearinghouse for Professions in Special Education
1920 Association Drive
Reston, VA 22091

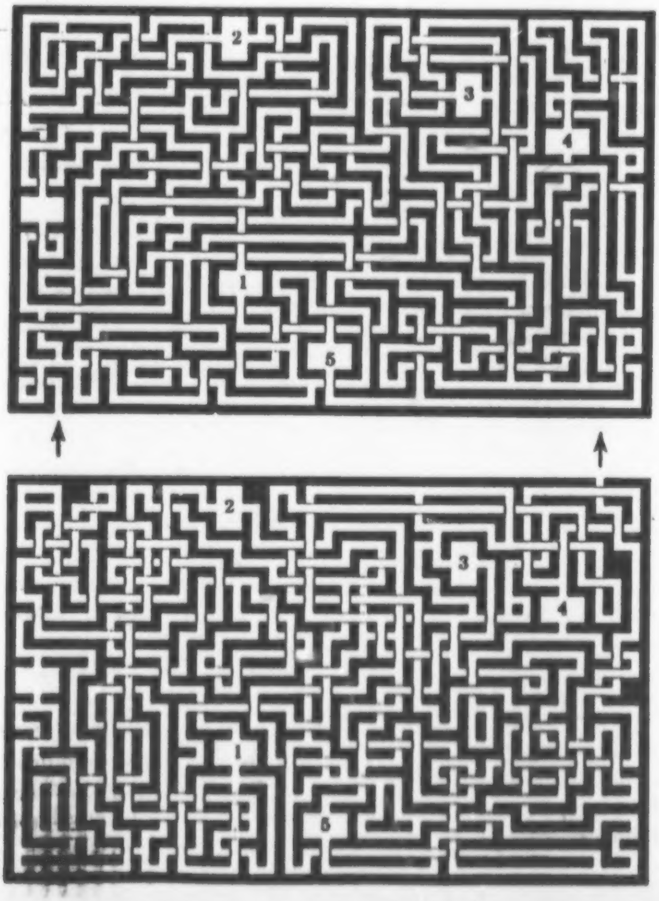
American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, MD 20852

American Translators Association
109 Croton Avenue
Ossining, NY 10562

American Veterinary Medical Association
1931 No. Meacham Road; Suite 100
Schaumburg, IL 60173

National Writers Club
1450 South Havana; Suite 620
Aurora, CO 80012

The American Society of Zoologists
Box 2739; 104 Sirius Circle
California Lutheran College
Thousand Oaks, CA 91360



Solution to Puzzle in March/April issue of *Imagine*:

The solution path is shown (dotted line); the rooms are numbered in the order in which they are visited. Remember that you jump to the opposite maze every time you come to a room.

If you are highly motivated, intellectually adventurous, and disciplined enough to work on your own, consider

CORRESPONDENCE COURSES & OTHER SPECIAL STUDY OPTIONS

When you run out of advanced courses offered by your school in a particular field and can't find an appropriate substitute locally—or if you're interested in a topic that falls outside most standard curricula—consider the many learning alternatives available to today's inquisitive student.

You can choose from a tempting smorgasbord of academic programs that are advertised as independent or home study, correspondence courses or learning by mail, distance learning, telecourses, and external degree programs.

Before you register for such a course, however, you'll need to take a close—and honest—look at your own study habits and current schedule.

First, Assess Yourself

To be successful at working independently, you must be strongly self-motivated. Even working with a mentor requires a higher level of self-discipline on your part than does taking a classroom-based course with a teacher who constantly reminds you of deadlines. The fact that many alternative learning courses are flexibly paced can be either a plus or a minus: you can use that flexibility to your benefit; or you can slack off and lose your momentum, along with your financial investment.

Adequate time is another critical factor. If you're like most students, your schedule is already loaded with academic, extracurricular, and social activities. Realistically, can you find room for yet another—perhaps even more rigorous and demanding—course?

No doubt, you want to try an alternative learning option because you're really intrigued by a particular subject. The strength of your interest may be just the incentive you need to master the challenges to your motivation and your schedule that independent study will involve.

Then, Assess Your Goals

Think about what kind of course you're really looking for:

■ ***One that will earn you academic credit?*** For-credit correspondence courses are offered at every academic level, with the broadest range of options available at the high school and undergraduate levels. Whether you're interested in a single subject or are seeking a full curriculum for home schooling, accredited college/university programs will have just what you want. Some area talent searches also offer a (more limited) selection of correspondence courses.

You'll need to use some discretion when signing up; be sure before you mail your check that the program is all it claims to be. For example, if you choose from courses in *The Independent Study Catalog* or *The Electronic University* (see sidebar), you are assured that the sponsoring institutions have met the standards set by the National University Continuing Education Association (NUCEA).

Of course, if you're hoping for high school credit, you'll also want to clear your choice with your school administration before registering.

■ ***One that will enhance your knowledge of a subject you're unlikely to take in school?*** Non-credit courses for your enrichment and sheer enjoyment are also offered by those organizations, as well as by local continuing education programs, museums, and libraries.

Finally, Examine Your Options

Correspondence courses, as the name suggests, used to depend upon the U.S. Postal Service—and many still do. But in the high-tech '90s, learning options are expanding dramatically as the school comes to the student, electronically.

Some options have been around long enough to be quite familiar to most of us, such as local TV stations' broadcast of courses during the breakfast hour. Within the past few years, we've also seen the increasingly widespread use of VCRs, fax machines, and even computer e-mail—enabling ready transmission of course lessons and homework between teacher and student.

Now, on the cutting edge of distance learning, some students can connect with professors and classmates by teleconferencing, gain access to libraries across the country on Gopher and Internet, or even (in limited areas) see, hear, and respond to teachers and other students by interactive video.

Given the speed with which technology is advancing, we may have to wait no more than a few years before these cutting-edge options are widely accessible. Meanwhile, television, computers, and videocassettes have already added new dimensions to the world of correspondence courses. ■

For an overview of enough options to boggle your mind, take a look at *The Independent Study Catalog: A Guide to Over 10,000 Continuing Education Correspondence Courses* (1992, $16.95), published by Peterson's in cooperation with the National University Continuing Education Association (NUCEA).

Another Peterson's/NUCEA collaboration, *The Electronic University: A Guide to Distance Learning Programs* (1993, $15.95) provides a listing of courses, degree programs, and certificates available electronically in the U.S.

Some of the more extensive correspondence offerings are available through the following universities:

Pennsylvania State University, Department of Independent Learning, 128 Mitchell Building, PO Box 3207, University Park, PA 16802-3693; (800) 252-3592 (for PA residents) or (800) 458-3617; fax (814) 865-3290.

Texas Tech University, Independent Study by Correspondence, Division of Continuing Education, Box 42191, Lubbock, TX 79409-2191; (800) MY-COURS; fax (806) 742-2318.

University of California Extension, Independent Study, 2223 Fulton Street, Berkeley, CA 94720; (510) 642-4124; fax (510) 643-8683.

University of Nebraska-Lincoln, Department of Independent Study, 269 Nebraska Center for Continuing Education, 33rd and Holdrege Streets, Lincoln, NE 68583-0900; (402) 472-1926; fax (402) 472-1904.

University of Wisconsin-Extension, Independent Study, 432 North Lake Street, Madison, WI 53706; (800) 442-6460; fax (608) 262-4096.

Duke TIP's Learn on Your Own Program

The Duke University Talent Identification Program (TIP) provides a self-directed curriculum in five subjects for academically able students. First, you arrange to work with a mentor in your own community—perhaps a teacher or another professional with expertise in the subject you want to pursue. Then you and your mentor use materials provided by TIP to explore topics at your own pace. Completed assignments are sent to TIP for grading.

At the rate of one lesson per week, each Duke TIP course may be completed in one academic semester. The cost per course ranges from $50 to $125; this includes college-level texts, supplemental materials, and instructional tapes. Courses to be offered during the 1994-95 school year include English Language: Use and Origin, Reflective Writing, Introductory Latin, Microeconomics, and Precalculus Mathematics (four levels).

For further information, write to Duke University TIP, PO Box 40077, Durham, NC 27706, or call (919) 684-3847.

STUDENTS REVIEW BROWN UNIVERSITY

College Review Series

This on-going series is intended to aid prospective college students in their search by offering insiders' views of selected colleges and universities, as expressed by current undergraduates or recent graduates who have exceptionally high academic ability. These students share a general bias in judging undergraduate education: they all have high expectations for a college or university's academic standards, its institutional and instructional flexibility, and its respect for nurturance of emerging talent. In this issue, we focus on Brown University.

Note that the number of student reviewers is small. Consider their personal perspectives as only one component while you gather factual information and impressions from such other sources as college catalogs, site visits, talks with officials and students on campus, and the advice of your guidance counselor and teachers.

Brown University

Our reviewers include nine students who major(ed) in biology (2), geological sciences (1), health & society (1), international relations (1), math (1), neuroscience (1), psychology (1), and Russian studies (1). Students' comments appear within quotation marks.

Quality of Academic Instruction for Undergraduates

Brown has one of the most liberal curriculum policies around: no core curriculum or distribution requirements. While recognizing the dangers inherent in this absence of constraints, our respondents all valued the freedom it gave them to shape their own education. They also spoke glowingly of the level of attention given to undergraduate education at Brown.

"Excellent. Brown's general attitude towards education is quite enlightened: students are expected to design their own education to meet their own goals. There is also a pass/fail option for students who want to challenge themselves in unfamiliar areas without unnecessary concerns about grad school admissions officers. I think my education was a resounding success. I wish I could have had a few more years there."

"The name 'University' is misleading, because in spirit Brown is a liberal arts college. Undergraduate education is the primary focus at Brown, and the quality of instruction is quite good. I have found professors to be universally friendly and accessible."

"The faculty are very committed to teaching. I chose Brown in part because I knew I would be taught by faculty, not TAs. The History and English Departments in particular have really fabulous profs who are successful in their research fields and who are at Brown because they love working with undergraduates."

"Excellent. I had a wonderful experience with my professors, particularly in the Math Department, which is small enough to allow students to get plenty of one-on-one attention. (Avoid the intro level courses, though!) The Computer Science Department was also a wonderful resource for me. There is a tremendous amount of computing power available to any undergraduate who takes one of Brown's very rigorous programming courses."

"One of Brown's unique offerings is its Program in Liberal Medical Education (PLME), an eight-year continuum in which students are accepted to Brown University and the School of Medicine in their senior year of high school. As a PLME student, I've spent the day with an emergency physician and a neonatologist at Brown-affiliated hospitals, attended lectures about medical topics and special issues in medicine such as women in surgery, and been encouraged to view medicine as an art as well as a science. I am a neuroscience concentrator, but PLME students are encouraged to major in whatever subject interests them most, not just science. There are a lot of ambitious premeds out there who live their lives for the MCAT—being in PLME has truly changed my life in terms of how I view my education."

"There are great advisors at Brown, but you have to go to them; they won't come to you. Some of my friends felt lost sophomore year, but they were not used to taking so much responsibility for themselves. I got a lot out of Brown, but I put a lot into it. That's part of the philosophy of the school—that you take responsibility for your education. I see that as a strength of the program, not a weakness. But it's not for everyone—some people do need more structure."

Social Life

Respondents agreed that Brown offers a full social life to its students.

"Freshman year was like being tossed into a living mulch heap: a melting-pot admixture of as diverse a group of students as the admissions office could muster, and an extremely fertile environment for social growth. After that, people did tend to separate into subgroups, some moving into fraternities, coed fraternities, or sororities, or going off-campus. But a few carefully-maintained hangouts such as 'The Underground' provided a common space for people to get together outside their own social connections."

"A cappella singing groups are very popular and perform at various functions. I'm in one, and it's a great experience—a wonderful break from our intense academic schedules. There's nothing like a good jam to improve your mood!"

"Brown is a great place to be if you have an interest in serving the wider community. There are a lot of well-organized service organizations that work in the Providence community and beyond. The school really promotes these activities."

"If you're looking for city nightlife, Providence is not the place for you. But there's plenty to do on campus—concerts, films, student theatrical production, poetry readings, etc. There were enough on-campus offerings that I didn't really need to venture into Providence."

Sample of a Talent Search Correspondence Course:

CTY's Expository Writing Tutorial-By-Mail

Wilmington

Welcome to Wilmington, the largest city in Delaware and 163rd in the country! If you want to party at sophisticated nightclubs, visit great museums or amusement parks, or shop at elegant stores, this is not the place for you. If you want to spend the day camping, breathing clean air, and appreciating the beautiful countryside, I'm afraid you will be disappointed. But, if you would like to eat at over one hundred different fast food 'restaurants,' visit gunpowder factories turned into 'historic' museums, and live a generally humdrum existence, welcome aboard. . . .

Dear John,

I've been planning to take a trip to celebrate my birthday, and after reading your description of Wilmington, moved Delaware straight to the top of my list. I can't wait to tour that gunpowder museum.

Do I sound too snide? Is my tone all wrong? Tone, as assignment ten pointed out, is crucial to humorous writing. Writing can only be funny if its tone is very consistent, because your readers need to know which lens you're using to view the world you're describing. You can choose any lens you like—whimsical or satiric, bitterly sarcastic or lightly ironic—but you can't change lenses in the middle. If you do, your readers will be confused, not entertained.

John, your tone is wonderfully consistent. You begin by evoking two kinds of desirable places—the vibrant city and the beautiful country—and then you tell us that Wilmington is neither. This tone of comic deflation continues through the rest of your essay. The train station is popular with senators . . . and drug dealers. The Longwood Gardens are beautiful . . . and a few miles across the Pennsylvania border.

Your tone is so consistent, in fact, that it almost masks certain structural problems. Only as I read your essay for the second time did I notice its lack of transitions. Each of your paragraphs is coherent and interesting, but the connections between them are not always clear.

Remember, transitions are not an empty requirement dreamed up by tyrannical English teachers (or EWT instructors). Rather, they are a good way to help your readers understand your meaning. If we can see how you think certain ideas are connected, we can begin to see what you might think they mean. . . .

The only way to become a writer is by writing. Working on this principle, writing students in talent search summer programs spend much of their day writing. They read works by published authors and discuss them; they read drafts by other students and critique them. But more than anything else, they write—exercises and free-writes, essays and revisions.

Nearly everything they write is carefully evaluated by instructors or teaching assistants. Instead of receiving a comment like 'Excellent!' and a good letter grade, students receive lengthy descriptions of what is good about their work and concrete suggestions for how it could be improved.

These kinds of classes may sound exciting to you. But what do you do when the summer is over? And what do you do if travel plans, or soccer practice, or family finances keep you from attending summer programs at all?

The **Expository Writing Tutorial (EWT)**, a correspondence course offered by CTY during the school year, may be one answer. The EWT is appropriate for students who have never attended a summer program, as well as for students who want to extend the skills they learned there.

As an EWT student, you'll be matched with an experienced writing instructor, who will read your work closely and then mail it back to you—covered with margin notes and accompanied by a long letter full of suggestions (as in the tutor's letter above). You'll complete fourteen assignments, one every two weeks. The kind of assignments you'll receive will depend on which EWT course you take:

EWT Level One concentrates on personal essays. Students practice the skills of description and narration, and begin working on analysis. These are some typical assignments: describe yourself through the eyes of a grandparent; tell the story of a crime you've committed; write a humorous guide to your hometown; compare an illusion with the discovered reality.

EWT Level Two focuses on critical and analytical writing, teaching students how to write effectively for various audiences. Students may receive assignments such as these: write a letter disagreeing with an editorial in your local paper; discuss the importance of a current event for your generation; analyze the symbolism in a short story; interview an interesting person.

EWT Level Three gives students practice in writing short stories. They learn to use characterization and dialogue, narration and conflict. Before bringing these skills together into actual short stories, students might practice them in exercises like these: write a dialogue in which two characters share a secret that is never revealed; describe a scene through the eyes of a man who has just fallen in love, without mentioning that fact; describe that same scene through the eyes of a man whose son has just died in the war.

No matter which level course you take, you'll be working on the same kinds of assignments that you would be given in a CTY summer program. Still, there are crucial differences between a correspondence course and a writing class, and it's important to consider them carefully before you decide whether the EWT is right for you.

As an EWT student, you may sometimes feel as though you're working alone. You'll hear from your instructor every few weeks, but you won't be able to rely on him or her for daily motivation and guidance. And you won't have classmates to turn to for support. Instead, you'll have to find ways to keep yourself going, week after week.

You'll face special demands as an EWT student, but you'll also have special opportunities. Because the tutorial will take place over an entire school year, you'll be able to bring more of your own life to your writing. If you've recently discovered a new author, you can try imitating his or her style; if something upsetting or important has just happened, you can explore that experience in your next essay. And if your muse fails to visit you one night, you can wait until you feel more inspired.

The EWT students who have enjoyed their tutorials the most are often the ones who communicate openly with their instructors. So consider sending personal notes along with your essays. Tell your instructor if you had trouble with a certain assignment, or if you disagreed with his or her comments on your last essay. The more your instructor knows about your experience of writing, the more closely he or she can focus on your particular needs. And that is what EWT instructors are especially able to do—address the specific problems of your writing, while nurturing your individual strengths. ■

For more information about the EWT (for students in grades 8 and above) or the new YWT (for those in grades 6 and 7), write to EWT/CTY or YWT/CTY, The Johns Hopkins University, 3400 North Charles Street, Baltimore, MD 21218; or call (410) 516-0161.

What Do You Like Best About Brown?

Respondents had already expressed their appreciation for Brown's curricular flexibility; in response to this question, they tended to focus on the atmosphere and their fellow students.

"Most people are extremely motivated and happy to be there. This created an atmosphere I really liked. I like the size, too—small enough that you see people you know, but big enough that there are always new people to meet."

"Working with my classmates and my advisor was a wonderful experience. It was a terrific feeling to be able to go full throttle intellectually with a small group of friends and to hammer out our ideas until the wee hours. My advisor took a personal interest in students who wanted to go farther with the material, and helped them get involved in exciting projects as early as freshman year. The other thing I really loved was meeting a lot of terrific, diverse people who knew how to have a good time."

"I am really happy with the program, with being given responsibility for my education, and with what I did with it. To me, an important part of college was being able to try what I wanted to try, no matter how it turned out. Brown really gave me that opportunity."

What Do You Like Least About Brown?

While Brown's curricular flexibility can be a very positive feature, respondents also noted that freedom can be ill-used or abused. One respondent also commented on urban crime.

"Some students are not ready to take responsibility for themselves. At Brown, you can float through, take really easy classes, and not learn a damn thing. It's your choice—you can waste the many opportunities Brown has to offer."

"Brown is criticized for being unrigorous, and it definitely can be. By giving students the opportunity to design their own educations, Brown sometimes allows those educations to be haphazard and without focus. I was a Resident Advisor, so I got to watch freshmen making their course selections. Because no courses are required, students tend to let their high school experiences determine the decisions they make in college—if someone had a boring physics class in high school, he might refuse to take any science classes in college. You go to college to learn things that you're going to use for the rest of your life—not all undergraduates are mature enough to take that consideration into account."

"Like so many other urban campuses, Brown has problems with urban crime—mostly burglaries, but there have been some assaults. A lot of women especially do not feel safe—you have to be cautious about where and how you go off-campus."

BROWN UNIVERSITY
Providence, RI 02912
(401) 863-2378

- 4-year private coed university
- Campus in the College Hill section of Providence.
- Semester system.
- Full-time undergraduate enrollment 1993-94: 2,750 men; 2,862 women.
- Special features: For more information about the PLME, call (401) 863-2450. The Rhode Island School of Design (not affiliated with Brown) was referred to by one reviewer as "a happy nearby resource."

Who Would Be Most Compatible with the Academic and Social Atmosphere at Brown?

Respondents again emphasized the maturity required to use (not abuse) Brown's curricular flexibility, and the politically liberal atmosphere.

"Someone who is prepared to think about the education that they want. The advantage of Brown's design-your-own curriculum is that the college doesn't choose what you learn—you choose for yourself what you want to know and carry with you for life. But making good use of that freedom requires maturity."

"Self-motivated. While academic standards at Brown are high, the learning environment is not a pressure cooker. There is little competition between students—most drive is internally generated."

"The student body is liberal, with a small ultra-liberal contingent. Things do sometimes get blown out of proportion, but I would rather be someplace where valid issues are raised than a place where people are afraid or not concerned enough to raise controversial issues."

"Open-minded. Respect for diversity is very important. Bigots, homophobes, and chauvinists are far less welcome here than at many other schools. A student who is ready to take part in events with a diverse population will do well here. In this community, there is a spot for just about everyone who wants to be a part of it."

If You Had It To Do Over Again, Would You Go To Brown?

All respondents said yes.

"Definitely, with no reservations. The feeling I had about Brown when I applied was only strengthened by my four years there. (And of course, there are a million things I didn't take the opportunity to do, that I'd love to go back for. . . .)"

"Absolutely. I can't think of another place I'd rather be. I grew more there than anywhere else in my life. It's a place that promotes thinking. If I had it to do over, I'd choose Brown again and love it even more the second time. I recommend it to people all the time, but always with the caveat that you have to be sure you want that much responsibility."

"Absolutely yes! Brown is dear to my heart. I like its diversity, friendly atmosphere, academic excellence, school spirit, and the opportunities it affords me. When I commented on Brown's weaker aspects, it was with affection for the core of the university, its reputation, faculty, and position in the academic world. Yay, Bruno!"

As you try to find the college or university best suited to you, the views of Brown presented above may be helpful. Keep in mind that these students might have had similar positive or negative experiences had they attended a different university. At any college, it is important for the individual student to seek out challenging academic experiences and the best professors, and to create a social life that best fits his or her personal style. ■

Note: The students quoted in the College Review Series are expressing their own views, which are not necessarily those of JHU or CTY.

CREATIVE MINDS

ImaGiNe...

Submit your creative work—brain teasers, short stories/essays/book reviews. We look forward to hearing from you.
Please write to *Imagine* • SET at CTY • The Johns Hopkins University • Baltimore, MD 21218

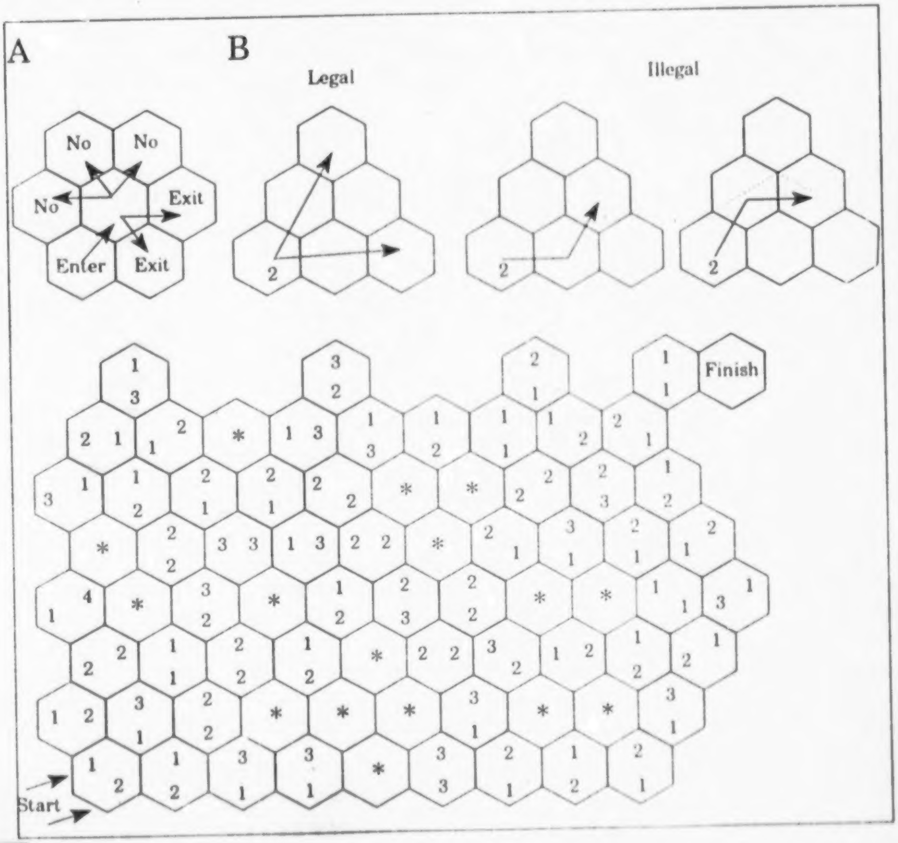
ANOTHER PUZZLE *by Tim Boester*

Directions:

The objective is to start at Start and finish at Finish. That sounds simple enough! The rules of this puzzle are, however, rather complicated, so we've included some examples to try to clarify the rules.

1) You must exit a hexagon on the same side of the dotted line that you enter (see example A). Thus, depending on the shape of the dotted line in a given hexagon, you will have one, two, or three sides from which you may exit.
2) The number in the hexagon indicates the number of hexagons you must jump in your next move (see example B). (Use the number on the same side of the dotted line as your entry point; ignore the number on the opposite side of the dotted line.)
3) Each move must travel a straight line (example B, "Legal" moves)—you cannot make dogleg moves (example B, "Illegal" moves).
4) Ignore the dotted lines in the hexagons that you **jump on**—the dotted lines are relevant only in the hexagons that you **land on** (see example B).
5) You can **jump on** but cannot **land on** asterisked hexagons. All hexagons—including asterisked ones—count in computing jumps.

Start at the indicated hexagon. You may begin on either the 1-or the 2-jump portion of the hexagon.



MY LANGUAGE

By *Jake Ng*

One day
I will invent a language
with words that whiz
through a school walkway,
tying up a bulky bully
before he snatches a smaller boy
by his collar;

words that snuggle
next to a struggling child
as she tries to add simple numbers
on the blackboard,
throwing the chalk on the ground with disgust,
until the words
whisper the answer
in her ear;

words that hover over a factory,
snatch a plume of smoke by its tail,
and toss it back inside;

words that melt
a saw before it can slice
the giant maple tree;
words that hold
the dead beach tree
and softly hum a funeral song;

"boomerang" words that
quiet the world
and glide back to the owner's feet.

Eighth grader **Jake Ng** has written two novels, numerous poems, and a comic book. A prize-winning pianist, violinist, and composer, he also enjoys playing with numbers and made the honor roll on this year's American High School Mathematics Examination. **"My Language," which Jake wrote when in fifth grade, was printed in *Award-Winning Poems*, Vol. XXVIII (1992), by the North Carolina Poetry Society and is reprinted with the author's permission.**

Fascinated by mazes and puzzles, **Tim Boester** is also intrigued by roller coaster design. Tim plans to study physics and math when he enters college next fall.